

IEEE *Xplore* 2.0 User Guide

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Overview

Welcome to IEEE *Xplore*

IEEE *Xplore* is a powerful resource for accessing publications from the Institute of Electrical and Electronics Engineers (IEEE) and the Institution of Electrical Engineers (IEE). The IEEE *Xplore* database contains more than a million articles in over 12,000 individual publications. IEEE adds about 25,000 new pages to the database per month, which builds upon a back file of content published since 1988 plus select content back to 1952.

IEEE *Xplore* provides convenient, real-time access to this continually updated database. You can search the database by specifying one or more authors, index terms, and other criteria. Once located, you can view and print individual articles and papers, search results lists, tables of contents, bibliographic records, and full-page images with no limit on the number of prints.

Through the CrossRef Search feature, IEEE *Xplore* also provides access to documents published by other leading publishers.

Collections in the IEEE *Xplore* Database

The IEEE *Xplore* database contains the following IEEE and IEE publication collections:

- **Journals, transactions, and magazines** published by the IEEE, dating from January 1988, with select content back to 1952.
- **Conference proceedings** published by the IEEE, dating from January 1988, with select content back to 1953.
- **IEEE Standards**, including superseded standards but not draft standards, dating from January 1988.
- **IEE journals, letters, magazines, and conference proceeding** from 1988.

All visitors can browse tables of contents and Abstracts in the IEEE *Xplore* database. Through subscription, IEEE Members and institutions have access to more detailed Abstracts and full-text content in the IEEE *Xplore* database. Purchase of articles is available to all visitors.

To see the publications to which you have access, click **Access Information** in the top toolbar.

In search results, the Subscriber icon  indicates articles where you have access to full text.

Record Structure of the IEEE *Xplore* Database

The IEEE *Xplore* database merges a subset of the INSPEC bibliographic database of Abstracts, compiled from technical journals published worldwide, with full-page images of all publications and HTML versions of some publications. To locate articles, you can use IEEE *Xplore* to search complete Abstract records using the following functions:

- **Basic and Advanced search options** to search through Abstracts and article text.
- **Author search** by last name and initials.
- **Index terms** that you can click to search the database for documents containing the term.
- **References** link to view a list of the article's referenced documents with links to view the Abstract, full-text PDF, Buy via Ask*IEEE, or CrossRef.
- **"Citing Documents"** link to view documents that cite the current document.
- **Author name links** to search for other documents written by that author.
- **CrossRef Search** to search through publications by other leading publishers participating in the CrossRef system.

The IEEE *Xplore* database contains complete original page images, including all charts, graphs, diagrams, photographs, and illustrative material, from an integrated-circuit schematic to a topographic map to a photograph of a new crystalline structure. All articles, papers, and standards are in PDF format so you see them as published.

In addition, the IEEE *Xplore* database contains HTML-formatted versions of *Proceedings of the IEEE* and *IEEE Spectrum* starting from 2002.

Subscription Packages

You must subscribe to a publication in order to view the full text using IEEE *Xplore*. Click **Access Information** in the top toolbar to see which publications are in your subscription.

IEEE members have an automatic subscription to full text of *IEEE Spectrum* online. Members belonging to one or more IEEE societies have access to their societies' subscriptions.

Institutions may purchase the most comprehensive full-text subscription available in the IEEE *Xplore* database (known as IEL) or to a variety of subset collections. Available subscription packages include access to the Abstracts and full-text published since 1988 and select content published since 1952.

- **IEEE/IEE Electronic Library (IEL)**: all IEEE and IEE journals, transactions, and magazines, all IEEE and IEE conference proceedings and colloquia, and all active IEEE standards
- **IEEE All-Society Periodicals Package (ASPP)**: IEEE society-sponsored journals, transactions, and magazines
- **IEEE Conference Proceedings Order Plan (POP)**: select IEEE conference proceedings

- **IEEE Conference Proceedings Order Plan All (POP ALL):** all IEEE conference proceedings
- **IEEE Enterprise:** pre-paid number of downloads from all IEEE journals, magazines, and conference proceedings
- **The Proceedings of the IEEE:** all issues of *Proceedings of the IEEE*
- **IEEE Spectrum Magazine:** all issues of *IEEE Spectrum*

Setting Up an IEEE Member Digital Library Account (IEEE Members)

The IEEE Member Digital Library brings IEEE Members exclusive, instant online access to full text of all IEEE journals, magazines, transactions, letters, and conference papers. IEEE Member Digital Library subscribers can file up to 25 articles each month in a filing cabinet.

To set up your IEEE Member Digital Library account:

1. You need to be an IEEE member.
2. You need to have a Web Account. Your IEEE Web Account is the key that unlocks both your online IEEE personal subscriptions and your IEEE Member Digital Library File Cabinet.
 - To become a member, go to www.ieee.org and click Membership.
 - When you create or renew your membership, select the IEEE Member Digital Library service.
 - To establish your Web Account, go to www.ieee.org, click Web Accounts, and create a Web Account.
 - Remember to keep your IEEE membership current.

As an IEEE Member Digital Library subscriber, you can view the full text of articles from publications that are not in your personal subscriptions. While logged in as an IEEE member, simply file the article in your IEEE Member Digital Library File Cabinet for convenient full-text viewing.

Browse and Search Functions

The browse functions are available to all visitors and are located under **BROWSE** in the navigation menu bar. After selecting a collection — Journals & Magazines, Conference Proceedings, or Standards — you can browse to a title of interest by using either the Browse by keyword or the Browse alphabetically option.

The Home page Basic Search function (search brief Abstracts) is available to all users, including users who do not subscribe to IEEE *Xplore* (guests). All other search functions are available only to IEEE members and subscribing institutions. IEEE *Xplore* provides four ways to search:

- **Basic Search** (Home page) lets you search for a single word or phrase throughout the entire database.
- **Advanced Search** provides more controlled searching. You can narrow the search to specific collections and publication years, and you can specify the format of search results. You can also narrow the search to specific fields of the database, such as Document Title, Publication Title, or Abstract. Option 1 structures the process of creating a search query, while Option 2 provides a free-form box for entering the search. Lists of field codes and search operators can easily be displayed to provide assistance.
- **Author Search** enables you to enter a complete or partial name and searches the author field in each citation record for your entry.
- **CrossRef Search** enables you to search publications by other leading publishers, employing the Google search engine.

Content Updates

The [Latest Content Update](#) link displays a page of links to the added or updated journals and magazines, conference proceedings, and standards for the past four weeks. On that page, you can also view updates for the current and the past year.

To view recently added content:

1. Click the link for the week with additions and updates you want to view.
2. Click the link to a publication to view its table of contents.

To view content added this year or last year:

1. On the Content Updates page, click the [Content Updates Archive](#) link.
2. On the Content Updates Archive page, from the pull-down menu select the week for which you want to view posted updates.
3. Select a publication type.
4. Click **Submit**.

Alerts

You can sign up to receive regular email notification of recently posted journals and magazines, including a direct link to the latest issue's table of contents in IEEE *Xplore*.

To begin receiving email alerts:

1. Click the [Visit Alerts](#) link on the Home page or **Alerts** in the top toolbar.
2. On the sign-up page, enter your name and email address.
3. Click **Submit**.
4. On the selection page, click to select each publication for which you want to receive update alerts.
5. Click **Submit Selection**.

To change your selections:

6. Repeat steps 1 through 3.
7. Click to select the publications to add to your alerts.
8. Click to unselect the publications to remove from your alerts.
9. Click **Submit Selection**.

To unsubscribe from email alerts:

10. Repeat steps 1 through 3.
11. Click **Unsubscribe**.

Top 100 Documents

You can view the 100 most frequently accessed documents for the month. To view the top 100 documents, click the [View Top 100](#) link on the IEEE *Xplore* Home page. A list of the documents is presented in Citation format, which you can change to Citation & Abstract. Links are available for viewing Abstracts and full text.

Getting Started

IEEE *Xplore* Home Page

The Home page is your starting place for accessing documents in IEEE *Xplore*. Everyone visiting IEEE *Xplore* can:

Task	Options on Home Page
Browse through publications, where you can view tables of contents and Abstracts	 <p>BROWSE SEARCH</p> <p>Journals & Magazines Conference Proceedings Standards or</p> <p>Browse</p> <p>» Journals & Magazines » Conference Proceedings » Standards</p>
Perform a quick search of brief Abstracts	<p>Basic Search</p> <p><input type="text" value="All Brief Abstracts"/> >></p>
View the latest updates to IEEE <i>Xplore</i>	Latest Content Update
Sign up for email alerts to find out when new issues are available	Visit Alerts
View the 100 most frequently accessed documents for the month	View Top 100

From anywhere in IEEE *Xplore*, you can return to the Home page by clicking **Home** in the top toolbar.

Click **Access Information** to see which publications are in your subscription.

If you are an IEEE member, more options are available to you (see “IEEE *Xplore* Home Page for IEEE Members”).

If you belong to an organization that subscribes to an IEEE online package, more options are available to you (see “IEEE *Xplore* Home Page for Institutions”).

IEEE Xplore Home Page for IEEE Members

The Home page is your starting place for accessing documents in IEEE Xplore. As an IEEE member, you can:

Task	Options on Home Page
Log in to access your personal subscriptions	<p>Login</p> <p>Username <input type="text"/></p> <p>Password <input type="password"/> >></p>
Perform advanced searching, author searching, and CrossRef searching Search session history	<p>SEARCH</p> <p>Advanced Author CrossRef Session History or</p> <p>» Advanced Search » Author Search » CrossRef Search (Home page)</p>
Access and file documents in your personal IEEE Member Digital Library	<p>IEEE MEMBER DIGITAL LIBRARY</p>
Browse through publications	<p>BROWSE SE</p> <p>Journals & Magazines Conference Proceedings Standards or</p> <p>Browse</p> <p>» Journals & Magazines » Conference Proceedings » Standards</p>
Perform a quick search in all fields	<p>Basic Search</p> <p>All Fields <input type="text"/> >></p>
View the latest updates to IEEE Xplore	<p>Latest Content Update</p>
Sign up for email alerts to find out when new issues are available	<p>Visit Alerts</p>
View the 100 most frequently accessed documents for the month	<p>View Top 100</p>

From anywhere in IEEE Xplore, you can return to the Home page by clicking **Home** in the top toolbar.

After you log in, click **Access Information** to see which publications are in your subscription.

IEEE *Xplore* Home Page for Institutions

The Home page is your starting place for accessing documents in IEEE *Xplore*. Through your institution's subscription, you can:

Task	Options on Home Page
Log in to access your institution's subscription benefits (if required)	Login Username <input type="text"/> Password <input type="password"/> >>
Perform advanced searching, author searching, and CrossRef searching Search session history	SEARCH Advanced Author CrossRef Session History or » Advanced Search » Author Search » CrossRef Search
Access and file documents in your organization's IEEE Enterprise File Cabinet	IEEE ENTERPRISE File Cabinet Frequently Asked Questions (FAQs) Technical Support
Browse through publications	BROWSE SEARCH Journals & Magazines Conference Proceedings Standards or Browse » Journals & Magazines » Conference Proceedings » Standards
Perform a quick search in all fields	Basic Search <input type="text" value="All Fields"/> >>
View the latest updates to IEEE <i>Xplore</i>	Latest Content Update
Sign up for email alerts to find out when new issues are available	Visit Alerts
View the 100 most frequently accessed documents for the month	View Top 100

From anywhere in IEEE *Xplore*, you can return to the Home page by clicking **Home** in the top toolbar.

After you log in, click **Access Information** to see which publications are in your institution's subscription.

Do I Need To Log In?

Anyone can access IEEE *Xplore* without logging in to browse the tables of contents and Abstract pages for the journals, conference proceedings, and standards in the collection. In addition, some users may have full-text access without logging in, depending on how their institution is accessing IEEE *Xplore* and their institution's subscription status.

Review the table below to determine whether you need to log in. Note that subscribing institutions can set up IEEE *Xplore* to verify their subscription status by IP address or a login ID (username and password). Your librarian or system administrator can tell you if you need to log in. After you log in, a welcome message with your name or your institutions name appears in the top banner.

If You Are:	You Can View:	Need IEEE Web Account?	Log In Using Which User ID?
Non-member or Guest	Tables of contents	no	none
	All Abstract records	no	none
IEEE member	All AbstractPlus records	yes	IEEE Web Account username and password
	IEEE Spectrum	yes	IEEE Web Account username and password
	Personal subscriptions	yes	IEEE Web Account username and password
IEEE member with an IEEE Member Digital Library subscription	Up to 25 nonsubscription full-text documents per month in IEEE Member Digital Library	yes	IEEE Web Account username and password
IEEE society member only	AbstractPlus records for personal subscriptions	yes	IEEE Web Account username and password
	Personal subscriptions	yes	IEEE Web Account username and password
Non-member at a subscribing institution	Institution's subscription package(s)	no	Institution username and password if institution requires user login; otherwise none (authenticated by IP address)
IEEE member at a subscribing institution	All AbstractPlus records	yes	IEEE Web Account username and password
	IEEE Spectrum	yes	IEEE Web Account username and password

If You Are:	You Can View:	Need IEEE Web Account?	Log In Using Which User ID?
	Personal subscriptions	yes	IEEE Web Account username and password
	Institution's subscription package(s)*	no	Institution username and password if institution requires user login; otherwise none (authenticated by IP address)
IEEE member with an IEEE Member Digital Library subscription at a subscribing institution	Up to 25 nonsubscription full-text documents per month in IEEE Member Digital Library	yes	IEEE Web Account username and password
Society member at a subscribing Institution	AbstractPlus records for personal subscriptions	yes	IEEE Web Account username and password
	IEEE Spectrum	yes	IEEE Web Account username and password
	Personal subscriptions	yes	IEEE Web Account username and password
	Institution's subscription package(s)*	no	Institution username and password if institution requires user login; otherwise none (authenticated by IP address)
IEEE member at an institution, while traveling	All AbstractPlus records	yes	IEEE Web Account username and password
	IEEE Spectrum	yes	IEEE Web Account username and password
	Personal subscriptions	yes	IEEE Web Account username and password
	Institution's subscription package(s)*	no	Institution username and password
IEEE member with an IEEE Member Digital Library subscription and at an institution, while traveling	Up to 25 nonsubscription full-text documents per month in IEEE Member Digital Library	yes	IEEE Web Account username and password

If You Are:	You Can View:	Need IEEE Web Account?	Log In Using Which User ID?
Society member at a subscribing institution, while traveling	AbstractPlus records for personal subscriptions	yes	IEEE Web Account username and password
	Personal subscriptions	yes	IEEE Web Account username and password
	Institution's subscription package(s)*	no	Institution username and password
Non-member at a subscribing institution, while traveling	Institution's subscription package(s)	no	Institution username and password

***Note:** A member at an access-authenticated subscribing institution who logs in with an IEEE Web Account username and password has access to the content allowed by membership subscriptions only. To access the subscribing institutions content, DO NOT log in as a member.

Logging In

The Login area allows you to access IEEE member or institutional subscriber benefits, such as access to search functions and full text of documents.

To log in:

1. Enter your username for your IEEE Web Account, or your institution's username if your institution is not authenticated by IP address.
2. Enter your IEEE Web Account password, or your institution's password if your institution is not authenticated by IP address.

Note: Your username and password are case-sensitive.

3. Click .

The system verifies your username and password and returns you to the Home page or the page you were attempting to access.

A login area appears when you are not logged in and try to access the AbstractPlus or full text of a publication, use a search function (other than Basic Search), or click [Access Information](#). For more information, see "Do I Need To Log In?"

Note: IEEE members need to create a username and password by establishing an IEEE Web Account before they can log in. The IEEE Web Account is also necessary for IEEE members who subscribe to the IEEE Member Digital Library.

Logging Out

If you are accessing IEEE *Xplore* through an institution, logging out of IEEE *Xplore* frees up one of your institution's seats for another user.

To log out:

Click  to log out of IEEE *Xplore*.

What Can I Access?

The  toolbar link enables you to see which publications you can access in a personal subscription or an institutional subscription.

Note: IEEE members must first log in with their IEEE Web Account username and password to view details of their personal IEEE online subscriptions.

If your institution's subscription requires logging in, to view details of those subscriptions you must sign in with the institution's username and password.

To discover what you can access:

1. Click .
2. Enter your username and password.
3. Click .

The system displays a list of publications in your personal subscription or your institution's subscription. Also, a welcome message in the top banner displays your name or your institution's name.

Note: Watch for the Subscriber icon  in search results. It indicates that you have access to full text.

Abstracts and AbstractPlus

Abstract

Everyone can view an Abstract. The standard Abstract record provides bibliographic citation and Abstract information.

AbstractPlus

Logged-in users with subscription access can view the AbstractPlus page. It provides the same information as the Abstract page, plus the following information and functions:

- Keyword searching using **index term links**
- By-author searching using **author links**
- Accessing related documents using **linked references**
- Accessing **citing documents**
- **Downloading of citations**

- Arranging for **rights and permissions** by selecting



, which takes you to the Copyright Clearance Center's Rights link electronic permissions service page

- **CODEN designation** and **INSPEC accession number**

Your institution's subscription determines whether you have access to the AbstractPlus for the article you are viewing.

Accessing the IEEE Member Digital Library (IEEE Members)

To access the IEEE Member Digital Library, follow these steps to open your IEEE Member Digital Library File Cabinet. These steps assume you have already signed up for an IEEE Member Digital Library account as part of your IEEE membership.

1. Log in to your IEEE Web Account.

Note: If you are an IEEE member with access to IEEE *Xplore* from an institution subscribing to IEEE *Xplore*, you need to log in to your Web Account to access the IEEE Member Digital Library.

2. Click **IEEE MEMBER DIGITAL LIBRARY** in the navigation menu bar. Then click **File Cabinet**. IEEE *Xplore* displays a list of the documents in your File Cabinet for the current month.

Note: If you see "Welcome IEEE member Digital Library Subscriber" when you first view your IEEE Member Digital Library File Cabinet, your File Cabinet is empty and ready for you to start adding documents.

Accessing the IEEE Enterprise File Cabinet

To access the IEEE Enterprise File Cabinet, follow these steps.

1. If you see the Login area, log in to your institution's IEEE Enterprise account.

Note: If you are logged in as an IEEE member but also have access through a subscribing institution, you need to log in to your institution's account to access the IEEE Enterprise File Cabinet.

2. Hover on or click **IEEE ENTERPRISE** in the navigation menu bar. Then click **File Cabinet**. IEEE *Xplore* displays a list of all documents in your IEEE Enterprise File Cabinet.

If you see "Welcome IEEE Enterprise Subscriber" when you first view your IEEE Enterprise File Cabinet, your file cabinet is empty and ready for you to start adding documents.

Printing IEEE *Xplore* Pages

You can print any page from IEEE *Xplore* by using your browser's **Print** function.

Some IEEE *Xplore* pages have a “printer friendly” alternative format. This format removes the navigation choices from the page so that the printout is easier to read.

Any page that has  printer friendly in the upper-right corner has a printer-friendly version. Click this button to display the printer-friendly version. Then use your browser's **Print** function.

When printing is finished, click [< Back to Previous Page](#) in the upper-right corner to return to the interactive IEEE *Xplore* page.

The following IEEE *Xplore* pages have printer-friendly versions:

- Table of Contents
- Abstract
- Search Results
- AbstractPlus

Browsing IEEE Xplore

Browsing IEEE Xplore General Procedure

Use the following general procedure to browse the journals and magazines, conference proceedings, and standards in the IEEE Xplore collections.

Selecting a Collection to Browse

1. Hover on or click  in the navigation menu bar. Then select **Journals & Magazines**, **Conference Proceedings**, or **Standards**. IEEE Xplore displays a list of titles starting with the letter A or beginning with a number.

Locating a Publication

1. Choose a particular title to browse. You can browse by keyword to quickly locate a specific publication, or you can browse alphabetically to look through the list of titles.
2. In the list of titles, click the  next to a title to view its title history.
3. View multiple pages of results by using the result-range links, such as [26-50](#).
4. Click a title to view the list of issues for that publication. The publication page is displayed.

Locating a Document (Issue or Volume)

For more details on finding a specific journal or magazine, conference proceedings volume, or standard, see the appropriate topic below:

- Browsing Journals & Magazines
- Browsing Conference Proceedings
- Browsing Standards

Browsing Journals & Magazines

The **Browse Journals & Magazines** page enables you to browse through all of the periodicals in the database.

To locate a journal:

1. Hover on or click  in the navigation menu bar. Then select **Journals & Magazines**. IEEE Xplore displays a list of titles starting with the letter A.
2. If you are interested in only IEEE titles or IEE titles but not both, make the appropriate choice in **CHOOSE**:

CHOOSE: All Titles IEEE Titles IEE Titles

Click .

3. Browse the list of journals by:
 - Using the Browse by keyword box.

OPTION 1
Browse by keyword
 Enter one or more keywords in the order they appear in the journal or magazine title.

or

- Using the Browse alphabetically area.

OPTION 2
Browse alphabetically
 Select a letter to view titles beginning with that letter.

[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#)

4. Use the result-range links (for example, [26-50](#)) to view more pages of results.
5. Click the next to a title to view its title history.
6. Click a journal or magazine title to see the list of issues. The publication page is displayed.

Note: If the publication has forthcoming articles approved for publication, a **Forthcoming** label appears above **Year** on the publication page:

Forthcoming:

Click the button to see a table of contents listing the forthcoming articles.

To locate an issue (on the publication page):

1. In the **Year** list, click the year of the issue you want to view.
2. In the **Issue** list, click the issue you want to view. The table of contents for the issue appears.

You can view the AbstractPlus or full text if you or your institution subscribes to the publication. You can view brief Abstracts if you do not subscribe to the publication.

Journals & Magazines Publication Page

The Journals & Magazines publication page appears when you click a specific journal or magazine title. From the publication page, you can:

All visitors:

- Go to a specific issue by selecting the year and the issue.

Year:

Issue:

From that issue's table of contents, you can browse article titles and view Abstracts.

- Look up the issue frequency, name of editor, ISDN number, and other publishing information.
- Review the title history, if the publication title has changed over time.

Institutional Subscribers and IEEE Members (login or access authentication required):

- Perform a simple keyword search of the publication to locate documents.

Search This Publication

 >>

- From the results list, view the Abstract of any article. Subscribers can view the AbstractPlus.

Subscribers to the publication:

- From an issue's table of contents, view the AbstractPlus and full text of articles.
- Read more detailed publication information, such as the list of Editorial Board members, and the announcements from the society publishing the journal.



Authors:

- Submit a manuscript for publication to the journal.



Journals & Magazines Table of Contents

The table of contents page appears when you choose an issue on a journal publication page. From the table of contents page, you can:

All visitors:

- Print the table of contents.

Use the  printer friendly button to display just the table of contents for printing.
- View the Abstract of a specific article by clicking the [Abstract](#) link.
- View multiple pages of results by using the result-range links, such as [26-50](#).
- For articles to which you do not have access:

IEEE Members: You can access full text by filing the documents in your IEEE Member Digital Library File Cabinet (if you subscribe) or by purchasing the documents.

If you belong to a **subscribing institution:** You can access full text by filing the documents in your institution's Enterprise File Cabinet (if your institution subscribes) or by purchasing the documents.

Other guests: You can access full text by purchasing the documents.

Institutional Subscribers and IEEE Members (login or access authentication required):

- Perform a simple keyword search of the documents in the issue.

Search this issue: All Fields

Subscribers to the publication:

- View a detailed Abstract by clicking [AbstractPlus](#).
- View full text of articles by clicking the [PDF](#) link.
- Read more detailed publication information, such as the list of Editorial Board members, and the announcements from the society publishing the journal.

**Authors:**

- Submit a manuscript for publication to the journal.

**Table of Contents of Forthcoming Articles**

When articles have been accepted for future publication in a journal or magazine, the publication page displays this indicator:

Forthcoming: [View Articles](#)

When you click the [View Articles](#) button, a table of contents appears, listing the titles of articles accepted for future publication in the journal or magazine. From here, you can:

All visitors:

- Print the table of contents. Use the printer friendly button to display just the table of contents for printing.
- View the Abstract of a specific article by clicking [Abstract](#).

Institutional Subscribers and IEEE Members (login or access authentication required):

- Perform a simple keyword search of the documents in the list.

Search this issue: All Fields

Subscribers to the publication:

- View a detailed Abstract by clicking [AbstractPlus](#).
- View full text of articles to which you have access by clicking [PDF](#).

Authors:

- Submit a manuscript for publication to the journal.



Browsing Conference Proceedings

The **Browse Conference Proceedings** page enables you to browse through all of the conference proceedings in the database.

To locate a conference proceeding:

1. Hover on or click **BROWSE** in the navigation menu bar. Then select **Conference Proceedings**. IEEE Xplore displays a list of titles starting with the letter A or beginning with a number.
2. If you are interested in only IEEE titles or IEE titles but not both, make the appropriate choice in **CHOOSE**:

CHOOSE: All Titles IEEE Titles IEE Titles

Click **>>**.

3. Browse the list of conference proceedings by:
 - Using the Browse by keyword box.

OPTION 1
Browse by keyword
 Enter one or more keywords in the order they appear in the conference proceeding title.

 >>

or

- Using the Browse alphabetically area.

OPTION 2
Browse alphabetically
 Select a letter to view titles beginning with that letter.

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

4. Use the result-range links (for example, [26-50](#)) to view more pages of results.
5. The **+** next to a title indicates a conference grouping. Click the **+** next to a title to view the titles of all conferences in the grouping.
Note: If you click the title next to the **+**, you can view the conference proceedings Home page.
6. Click a conference publication title to see the list of volumes. The publication page is displayed. You can view the AbstractPlus or full text if you or your institution subscribes to the publication. You can view brief Abstracts if you do not subscribe to the publication.

Conference Proceedings Home Page

When you click the **+** next to a conference title, you view the Home page for the grouping of conferences under that title. On the conference proceedings Home page, you can:

All visitors:

- Go to a specific conference proceeding by clicking its link.

Institutional Subscribers and IEEE Members (login or access authentication required):

- Perform a simple keyword search of the listed conference proceedings.

Search these Conference Proceedings

All Fields

- From the results list, view the Abstract of any article. Subscribers can view the AbstractPlus.

Subscribers to the publication:

- From an issue's table of contents, view the AbstractPlus and full text of papers in the publication.

Conference Proceedings Publication Page

The **Conference Proceedings** publication page appears when you click a conference title. From the publication page, you can:

All visitors:

- Go to a specific volume by clicking its title.

Date: [6-10 April 2003, Vol.3](#)
[6-10 April 2003, Vol.1](#)
[6-10 April 2003, Vol.5](#)
[6-10 April 2003, Vol.6](#)
[6-10 April 2003, Vol.2](#)
[6-10 April 2003, Vol.4](#)

From the volume's table of contents, you can browse paper titles and view Abstracts.

- Review the title history and related conference proceedings titles.

Institutional Subscribers and IEEE Members (login or access authentication required):

- Perform a simple keyword search of the conference proceeding volumes to locate papers.

Search this Publication

All Fields

Subscribers to the publication:

- From an issue's table of contents, view the AbstractPlus and full text of papers in the publication.

Conference Proceedings Table of Contents

The table of contents page appears when you choose a volume on a conference proceedings publication page. From the table of contents page, you can:

All visitors:

- Print the table of contents.

Use the  printer friendly button to display just the table of contents for printing.

- View the Abstract of a specific paper by clicking the [Abstract](#) link.
- View multiple pages of results by using the result-range links, such as [26-50](#).
- For articles to which you do not have access:

IEEE Members: You can access full text by filing the documents in your IEEE Member Digital Library File Cabinet (if you subscribe) or by purchasing the documents.

If you belong to a **subscribing institution:** You can access full text by filing the documents in your institution's Enterprise File Cabinet (if your institution subscribes) or by purchasing the documents.

Other guests: You can access full text by purchasing the documents.

Institutional Subscribers and IEEE Members (login or access authentication required):

- Perform a simple keyword search of the documents in the publication.

Search this issue: All Fields

Subscribers to the publication:

- View a detailed Abstract by clicking [AbstractPlus](#).
- View full text of papers by clicking [PDF](#).

Browsing Standards

The **Browse Standards** page enables you to browse through all of the standards in the database.

To locate a standard:

1. Hover on or click  in the navigation menu bar. Then select **Standards**. IEEE Xplore displays a list of titles organized by standard number.
2. Browse the list of standards using the Browse by keyword box.

 **Browse by keyword**
Enter a standard number or one or more keywords in the order they appear in the standard title.

3. Use the result-range links (for example, [26-50](#)) to view more pages of results.

- Click a standard title to view the publication page for the standard. You can view the AbstractPlus or full text if your institution subscribes to the publication. You can view brief Abstracts if you do not subscribe to the publication.

Standards Publication Page

The **Standards** publication page appears when you click the title of a standard. From the publication page, you can:

All visitors:

- View the Abstract by clicking the [Abstract](#) link.
- For a standard to which you do not have access: You can access full text by purchasing the standard at <http://shop.ieee.org/ieeestore/>.

Institutional Subscribers and IEEE Members (login or access authentication required):

- View a detailed Abstract by clicking [AbstractPlus](#).

Locating a Document in the IEEE Member Digital Library

- Log in to your IEEE Web Account.
- Hover on or click **IEEE MEMBER DIGITAL LIBRARY** in the navigation menu bar. Then select **File Cabinet**. IEEE Xplore displays your Member Digital Library File Cabinet, showing documents filed in the current month.
- Select the year in which you filed the document you want to locate. Then select the month.

Year:

Month:

IEEE Xplore displays the documents filed during the selected month and year. The documents are listed in the order in which you filed them.

- You can resort the documents by article title or author last name (first author) by using the following choices:

By:

In: Order

Locating a Document in the IEEE Enterprise File Cabinet

Use the following procedure to quickly locate a specific document in the IEEE Enterprise File Cabinet.

1. Hover on or click **IEEE ENTERPRISE** in the navigation menu bar. Then click **File Cabinet**. IEEE *Xplore* displays your IEEE Enterprise File Cabinet.
2. Enter one or more words in the **Quick Find** box.



If you enter more than one word, Quick Find searches for the words as a phrase, in the order you entered them, not as individual words.

Note: You cannot include Boolean operators (AND, OR, and NOT) or special characters (, () @ [] { } < > “ ’ \). If you use one of these operators or characters, you receive the message “Request Cannot Be Processed.”

3. Select **Publication Title**, **Document Title**, or **Author** after **IN** to specify the type of search.
4. Click **>>**. IEEE *Xplore* searches the File Cabinet for the terms you entered, and presents a list of matching documents.

The Quick Find function returns plural and suffixed forms of the words you entered. For example, if you enter one word, “electron”, the results include words such as electrons, electronic, and electronically. If you enter more than one word (a phrase), only the plural and suffixed forms of the last word are included. This capability helps you locate articles when you are unsure of the exact title or name.

The results match the words you entered regardless of most punctuation you include. For example, if you search for **solid-state**, your results may include “solid-state”, “solid state”, and “solid_state”.

5. To search within your results, repeat steps 2 through 4.
6. To view again all articles in the File Cabinet, click your browser **Back** button.

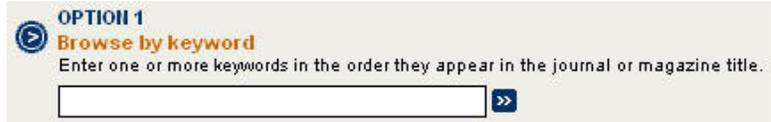
If you receive no results, click your browser **Back** button and modify your search query to include fewer words. If you are searching in the Document Title field, you can broaden your search to the Publication Title field.

You can also browse the File Cabinet if you are unsure of the exact words to use in a search query.

Browsing by Keyword

Use the following procedure to quickly locate a specific journal, conference proceeding volume, or standard. This procedure assumes you have clicked **BROWSE** and selected a publication type (**Journals & Magazines**, **Conference Proceedings**, or **Standards**).

1. In the **Browse by keyword** box:



enter one or more keywords from the title of the publication.

Note: If you are unsure of the spelling, you may enter a partial keyword.

2. Click . IEEE Xplore filters through each publication's title to locate the words you entered, and presents a list of titles including those words.
3. If more titles containing the keyword exist than appear on the first page, click the result-range links, such as [26-50](#), to view more pages of titles.

The Browse by keyword function returns results containing plural and suffixed forms of the keyword(s). For example, if you enter the keyword "electron", the results include titles containing words such as electrons, electronic, and electronically. This capability helps you locate publications by topic when you are unsure of the exact title.

The results match your keyword(s) regardless of most punctuation you include. For example, if you search for **solid-state**, your results may include "solid-state", "solid state", and "solid_state".

Browsing Alphabetically

Use the following procedure to see a list of titles for journals, conference proceedings, or standards. This procedure assumes you have clicked **BROWSE** and selected a publication type (**Journals & Magazines**, **Conference Proceedings**, or **Standards**).

1. In the **Browse alphabetically** area:



click a letter to see publication titles beginning with that letter.

Note: You can click the letter matching the first word in the title or the first significant word in the title.

The first page of titles beginning with that letter appears.

2. If more titles beginning with that letter exist than appear on the first page, click the result-range links, such as [26-50](#), to view more pages of titles.

Searching IEEE Xplore

Searching IEEE Xplore General Procedure

Use the following general procedure to search the IEEE Xplore collections.

Quick Searching

1. On the Home page, enter a keyword in the **Basic Search** box and click .

Basic Search



Basic Search is available to everyone visiting IEEE Xplore.

or

You can perform a quick search on a publication page or table of contents page for a publication. Enter a keyword in the **Search This Publication**, **Search this issue**, or **Search this Conference Proceeding** box and click . You need to be logged in to IEEE Xplore to perform searching within publications.

More Advanced Searching

You need to be logged in to your institution's subscription account to access advanced searching functions. IEEE members must be logged in to IEEE Xplore with their IEEE Web Account username and password.

1. Select **Advanced** or **Author** under **SEARCH**.
2. Enter a keyword, phrase, author name, or search query in the text box(es).
3. Select additional search options (Advanced search).
4. Click **Run Search** or . IEEE Xplore returns a list of results. The Subscriber icon  indicates the articles where you have access to full text.

Revising Search Results

5. You can refine your search by modifying or replacing your search query and clicking .

Searching within Search Results

6. To search for a subset of results within your current results set, enter one or more keywords, click the checkbox next to **Check to search only within this results set**, and click .

Selecting a Result

7. View multiple pages of results by clicking the result-range page links, such as [26-50](#).

- Click [Abstract](#) or [AbstractPlus](#) to view an article's Abstract, or [PDF](#) to view the full text.

Note: You can view full text if you or your institution subscribes to the publication. You can view the AbstractPlus if you are an IEEE member or your institution subscribes to the publication. All visitors can view brief Abstracts.

Using Basic Search

Basic searching enables you to search the database for one or more keywords in any field. Use advanced searching if you want to narrow your search by field, collection, or date, or if you want to combine keywords in specific ways.

To perform a basic search:

- On the IEEE Xplore Home page, enter one or more keywords in the **Basic Search** box:

Basic Search

broadband wireless access >>

- Click >>.

If IEEE Xplore asks you to log in: Enter your username and password. See “Do I Need To Log In?” if you need more information.

IEEE Xplore looks for matches in any of the following fields: document title, publication title, author, Abstract, index terms, and affiliation. It displays a list of results matching your keyword(s).

- You can view a detailed Abstract by clicking [AbstractPlus](#).
- For articles in publications to which you subscribe, you can view full text by clicking [PDF](#).

The Subscriber icon  indicates articles where you have access to full text.

- You can view multiple pages of results by using the result-range links, such as [26-50](#).

For articles in publications to which you do not subscribe:

- IEEE Members:** You can access full text by filing the documents in your IEEE Member Digital Library File Cabinet (if you subscribe) or by purchasing the documents.
- If you belong to a **subscribing institution:** You can access full text by filing the documents in your institution's IEEE Enterprise File Cabinet (if your institution subscribes) or by purchasing the documents.
- Other guests:** You can access full text by purchasing the documents.

Searching within a Publication

You can use simple keyword searching to locate specific articles or papers in the publication you are browsing. You need to be logged in to IEEE *Xplore* to perform searching within a publication.

1. Hover on or click  in the navigation menu bar. Then select **Journals & Magazines**, **Conference Proceedings**, or **Standards**. IEEE *Xplore* displays a list of titles starting with the letter A.
2. Access the publication you want by browsing by keyword or browsing alphabetically.
3. Optional: Click the issue or volume containing the article(s) or paper(s) of interest.
4. To find the articles or papers of interest, enter one or more keywords in the **Search This Publication**, **Search this issue**, or **Search this Conference Proceeding** box.
5. Click .

If IEEE *Xplore* asks you to log in: Enter your username and password. See “Do I Need To Log In?” if you need more information.

IEEE *Xplore* searches in the following fields for the keyword(s) you entered: document title, publication title, author, Abstract, index terms, and affiliation. It displays a list of results matching your keyword(s)

From the results list, you can view the AbstractPlus or full text of articles.

The Subscriber icon  indicates the articles where you have access to full text.

Using Advanced Search General Procedure

Use advanced search if you want to narrow your search by field, collection, or date, or if you want to combine keywords in specific ways. Advanced Search is available to IEEE members and subscribers.

To perform an Advanced Search:

1. Hover on or click  in the navigation menu bar. Then select **Advanced**.
If IEEE *Xplore* asks you to log in: Enter your username and password. See “Do I Need To Log In?” if you need more information. IEEE *Xplore* displays the **Advanced Search** page.
2. Enter your search query using either the structured search (Option 1) or the free-form search (Option 2). When you click , IEEE *Xplore* displays the results of your search.
3. You can view a detailed Abstract by clicking [AbstractPlus](#).
4. For articles in publications to which you subscribe, you can view full text by clicking [PDF](#).

The Subscriber icon  indicates articles where you have access to full text.

- You can view multiple pages of results by using the result-range links, such as [26-50](#).

For articles in publications to which you do not subscribe:

- IEEE Members:** You can access full text by filing the documents in your IEEE Member Digital Library File Cabinet (if you subscribe) or by purchasing the documents.
- If you belong to a **subscribing institution:** You can access full text by filing the documents in your institution's IEEE Enterprise File Cabinet (if your institution subscribes) or by purchasing the documents.
- Other guests:** You can access full text by purchasing the documents.

Structured Advanced Search (Option 1)

The **Advanced Search** page provides a structured way for you to perform a more complex search. The following procedure assumes you have clicked **SEARCH** in the navigation menu bar and selected **Advanced**.

- In the Option 1 area, click in the first text box and enter a keyword. The keyword can be a subject term, last name, date, or phrase. If you are unsure of the spelling, you may enter a partial word or name. You may also use wildcards.

IEEE *Xplore* searches for items regardless of capitalization. See “Entering Search Keywords” for additional rules governing entry of search keywords.

- Limit your search by selecting a choice in the field list next to the text box.



IEEE *Xplore* looks for the search string in all fields unless you select a choice from this list.

- To include additional words or phrases in the search query, enter search text and select field codes for the other search query boxes as necessary. Define the relationship between the query boxes by selecting search operators from the pull-down menus between the text boxes. For example:

OPTION 1

Enter keywords or phrases, select fields, and select operators

<input type="text" value="broadband wireless access"/>	in	<input type="text" value="Document Title"/>
OR	<input type="text" value="biwa"/>	in <input type="text" value="Document Title"/>
AND	<input type="text"/>	in <input type="text" value="All Fields"/>
<input type="button" value="Run Search"/> <input type="button" value="Reset"/>		

The search operators available in the pull-down menus are:

AND: Searches for records that meet the two conditions it joins.

OR: Searches for records that meet either or both of the two conditions it joins.

NOT: Searches for records that do *not* meet the specified condition.

4. Limit your search results by adjusting the search options. You can:
 - Select publication types
 - Select years to search
 - Organize the format of search results
5. Click . IEEE *Xplore* looks through the citation records and presents a list of results matching your query. The Subscriber icon  indicates articles where you have access to full text.
6. If more titles containing the keyword exist than appear on the first page, click the result-range links, such as [26-50](#), to view more pages of titles.

Limiting a Search to Specific Collections

In advanced search, you can limit your search to a subset of the IEEE *Xplore* collections by selecting the appropriate choices under **Publications**.

Publications

Select publications

- IEEE Periodicals
- IEE Periodicals
- IEEE Conference Proceedings
- IEE Conference Proceedings
- IEEE Standards

Search subscribed content only

IEEE *Xplore* searches in all collections until you specify a subset. It keeps your choice active until you change it.

Institutions that subscribe to certain subset packages (see “Subscription Packages”) can limit search results to only those documents to which they have full access by selecting **Search subscribed content only**.

Limiting a Search to Specific Years

In advanced search, you can limit your search to specific years of publication by selecting the appropriate choices under **Select date range**.

» **Select date range**

Search latest content update (20-January -2005)

From year to

IEEE *Xplore* searches in all publication years until you specify a subset. It keeps your choice active until you change it.

You can limit search results to the most recently added content by selecting **Search latest content update**.

Controlling the Search Results Format

In advanced search, IEEE *Xplore* normally displays your results using the following format specifications:

» **Display Format**

Citation Citation & Abstract

» **Organize results**

Maximum

Display results per page

Sort by

In order

You can change these specifications to view your results in a different format. IEEE *Xplore* keeps your specifications active until you change them.

Your options are:

- **Citation** format consists of document title, author, publication title, and bibliographic information. **Citation & Abstract** format also includes the first 30 to 40 words of the Abstract.
- **Maximum** sets the total number of results found. Choices are 100, 250, and 500.
- **Display...results per page** sets the number of results displayed per page. Choices are 25, 50, and 100.
- **Sort by** sets the criteria for ordering the results. Choices are **Relevance** (how well the result matches the search query as determined by IEEE *Xplore*), **Year** (numerical order by publication year), and **Document Title** (alphabetical, ignoring leading articles such as “a”, “the”, and “an”).
- **In...order** sets the sort order. Choices are **Descending** (high to low) and **Ascending** (low to high).

Free-Form Advanced Search (Option 2)

The **Advanced Search** page enables you to enter a free-form search query. In free-form advanced search, you can specify and perform more complex searches than you can using structured advanced search. You can join more than four search terms, use other operators in addition to **And** and **Or**, and exert more control over the order in which to evaluate expressions.

The following procedure assumes you have clicked **SEARCH** in the navigation menu bar and selected **Advanced**.

1. In the Option 2 area, click in the text box and enter a keyword. The keyword can be a subject term, last name, date, or phrase. If you are unsure of the spelling, you may enter a partial word or name. You may also use wildcards.

IEEE Xplore searches for items regardless of capitalization. See “Entering Search Keywords” for additional rules governing entry of search keywords.

2. Limit your search by specifying which field to search in, using the **<in> operator** and a field code as shown in the following syntax:

keyword <in> fieldcode

where **keyword** is your search keyword or phrase and **fieldcode** is a field abbreviation listed in the summary of field codes.

IEEE Xplore looks for the keyword in all fields unless you limit the search to specific fields.

3. Combine multiple search expressions as needed. Use operators to define the relationship between search expressions, using the following syntax:

search_expression <operator> search_expression

where **search_expression** is a search string and an optional field specification, and **<operator>** is an operator listed in the summary of search operators.

For example, the following search expression looks for either the phrase **broadband wireless access** or the abbreviation **bwa** in document titles:



OPTION 2

Enter keywords, phrases, or a Boolean expression

```
{broadband wireless access<in>ti} <or>
{bwa<in>ti}
```

Run Search

Reset

See “Search Examples” for more information.

4. Limit your search results by adjusting the search options. You can:
 - Select publication types
 - Select years to search
 - Organize the format of search results
5. Click . IEEE *Xplore* looks through the citation records and presents a list of results matching your query. The Subscriber icon  indicates articles where you have access to full text.
6. If more titles containing the keyword exist than appear on the first page, click the result-range links, such as [26-50](#), to view more pages of titles.

Summary of Field Codes

Field codes are elements that identify specific parts of an Abstract record. By limiting a search to a specific field, you can reduce the time it takes to process the search and produce more targeted results. Here are the field codes you can use in search expressions.

Field Name	Field Code
Abstract	ab
Affiliation	cs
All fields	metadata
Author(s)	au
Catalog number	ca
CODEN	cn
Conference date	cy
Document title	ti
Editor(s)	au
Full text	pdfdata
Index term	de
ISBN	in
ISSN	in
Issue number	is
Issue part number	pt
Meeting date	cy
Part number	pt
Publication name	jn
Publication year	pyr
Subject term	de
Title	ti
Volume	vo

Summary of Search Operators

Search operators are elements that express relationships between search terms or search expressions, or that otherwise modify a query. In structured advanced searching, you can use the logical operators **And**, **Or**, and **Not**. In free-form advanced searching, you can use any of the following operators.

Operator	Syntax	Find Results that...
<and>	<i>x</i> <and> <i>y</i>	Match both expressions <i>x</i> and <i>y</i>
<or>	<i>x</i> <or> <i>y</i>	Match either expression <i>x</i> or <i>y</i> or both
<not>	<not> <i>x</i>	Do <i>not</i> match expression <i>x</i>
	<i>x</i> <not> <i>y</i>	Match expression <i>x</i> but <i>not</i> <i>y</i>
<in>	<i>x</i> <in> <i>y</i>	Match expression <i>x</i> in field <i>y</i> .
<paragraph>	<i>x</i> <paragraph> <i>y</i>	Match expressions <i>x</i> and <i>y</i> in same paragraph
<sentence>	<i>x</i> <sentence> <i>y</i>	Match expressions <i>x</i> and <i>y</i> in same sentence.
<phrase>	<i>x</i> <phrase> <i>y</i>	Match expressions <i>x</i> and <i>y</i> in same phrase.
<near>	<i>x</i> <near/ <i>y</i> > <i>z</i>	Match expression <i>x</i> within <i>y</i> words of expression <i>z</i> .
<many>	<many> <i>x</i>	Match expression <i>x</i> , with results listed in score order based on density of <i>x</i> .
<order>	<order> <i>x</i>	Match order of terms in expression <i>x</i> .
<thesaurus>	<thesaurus> <i>x</i>	Match synonyms of <i>x</i> as well as <i>x</i> itself.
<wildcard>	<wildcard> `x`	Match variations or patterns. `[xy]` Match any letter <i>x</i> or <i>y</i> . `[^xy]` Match any letter <i>but</i> <i>x</i> or <i>y</i> . `{ab,xy}` Match string <i>ab</i> or <i>xy</i> .
<stem>	<stem> <i>x</i>	Match stem variations of <i>x</i> ; don't score results.
<word>	<word> <i>x</i>	Match <i>x</i> exactly.

Using Author Search

Use author search if you want to find documents by specific authors. Author search is available to IEEE members and subscribers.

To perform an author search:

1. Hover on or click  in the navigation menu bar. Then select **Author**.

If IEEE *Xplore* asks you to log in: Enter your username and password. See “Do I Need To Log In?” if you need more information. IEEE *Xplore* displays the **Author Search** page.

2. Enter a last name in the **Quick Find an Author** box and click .



Note: Use one of the following formats to enter the name. For example, if you want to search for Mary R. Jones:

- Jones (just the last name)
- Jones M (the last name plus one initial, with or without a following period)
- Jones M. R. (the last name plus two initials, each followed by a period and separated with a space)

Make sure that you do NOT use a comma. It is a special query language character.

Note: If you enter a partial last name, IEEE *Xplore* returns a list of last names starting with the letters you entered.

3. Use the  and  buttons to scroll through the results, 50 at a time.
4. Click a name to view a list of articles written by that author. The Subscriber icon  indicates articles where you have access to full text.

You can also browse author names alphabetically.

Browsing Authors Alphabetically

You can look through alphabetical lists of author names in IEEE *Xplore*.

This procedure assumes you have clicked **SEARCH** in the navigation menu bar and selected **Author**.

1. On the Author Search page, click a letter to view author names beginning with that letter.



IEEE *Xplore* returns a list of the first 50 authors whose last names start with that letter.

2. Use the **Next 50** and **Previous 50** buttons to scroll through the results, 50 at a time.
3. Click a name to view a list of articles written by that author. The Subscriber icon  indicates articles where you have access to full text.

Formatting Author Names

To find an article written by a particular author, you need to follow the IEEE *Xplore* rules for specifying author names:

- Enter the last name first.
- If you know the first name or initial, enter a space, followed by the *initial*. The period (.) after the initial is optional. Do not enter a comma (,) after the last name and do not enter more than the initial letter of the first name.
- If you know the middle name or initial, enter a space after the first initial, followed by the initial of the middle name, followed by a period (.).
- Asian names appear as provided in the article or paper. If an Asian name includes a non-Asian first name, that part of the name is abbreviated to a first initial.

Examples:

johnson j. w.

Matches **Johnson, J.W.** Does not match **Johnson, J.** (both initials must match) or **Johnson, J.R.**

johnson s.

Matches **Johnson, S.** and **Johnson, S.L.** Does not match **Johnson, J.** or **Johnson, J.S.**

CrossRef Search Pilot

CrossRef Search Pilot allows you to search full text of participating publishers' scholarly documents indexed by Google™. Use CrossRef Search Pilot, powered by the Google search engine, to locate content from participating publishers' sites, including IEEE.

Full-text access to articles is determined by each publisher and your institution's subscriptions. CrossRef Search is available to IEEE members and institutional subscribers.

To perform a CrossRef Search:

1. Hover on or click **SEARCH** in the navigation menu bar. Then select **CrossRef**.

If IEEE *Xplore* asks you to log in: Enter your username and password. See "Do I Need To Log In?" if you need more information. IEEE *Xplore* displays the **CrossRef Search Pilot** page.

2. Enter your search query into the search box. When you click **Search**, the first page of Google search results appears in a new browser window, grouped by publisher.
3. You can view an article by clicking its title. You may be asked to log in to the publisher's website.
4. You can view multiple pages of results by using the page links.

Result Page: 1 [2](#) [3](#) [4](#) [5](#) [6](#) [7](#) [8](#) [9](#) [10](#) [Next](#)

For the most comprehensive search of IEEE content, use the IEEE *Xplore* Advanced Search.

Reusing Previous Searches

Your session history lists the search queries you have used since you last logged in to IEEE *Xplore*. You can reuse or modify these search queries. Session history is erased when you log off or your session times out.

To reuse a search query from earlier in your session:

1. Hover on or click **SEARCH** in the navigation menu bar. Then select **Session History**. (On the **Search Results** page, you can also click [View Session History](#).)

Note: If you are asked to log in at this point, your session history will be empty.

IEEE *Xplore* displays the **Search Session History** page, listing search queries you entered earlier in the session. For example:

Search Query Display	
<input type="text"/>	
Run Search	Reset
Recent Search Queries	Results
#1 (mimo<in>ti) <and> (ofdm<in>ab)	67
#2 (broadband wireless access<in>ti) <or> (bwa<in>ti)	94
Clear Session History	

2. Click the number of the search query you want to reuse. The query appears in the **Search Query Display** box.
3. (Optional) Modify the query as needed in the **Search Query Display** box.
4. Click . IEEE *Xplore* runs the search and displays the results page.

The Subscriber icon  indicates articles where you have access to full text.

Tips for Effective Use of Search

Ideally the first query you enter for your search yields the results you want. Typically, you need to reformulate your searches to get the best results. Here are guidelines and strategies for improving search results:

- Entering Search Keywords
- Revising a Search
- Searching for an Exact Word or Phrase
- Searching with Wildcard Characters
- Specifying Multiple Criteria
- Nesting Search Operations
- Searching with Incomplete Information
- Narrowing a Search
- Broadening a Search

Entering Search Keywords

The following conventions govern how you enter search keywords:

- **Capitalization:** IEEE *Xplore* searches for items regardless of capitalization.
- **Keyword phrases:** IEEE *Xplore* interprets multiple keywords as a phrase.
- **Stem variations:** IEEE *Xplore* looks for plural and suffixed forms of any keywords entered. For example, if you enter **cable**, IEEE *Xplore* also looks for words like **cables** and **cabling**. See “Searching for an Exact Word or Phrase” if you do not want IEEE *Xplore* to search for variations.
- **Punctuation:** IEEE *Xplore* ignores most punctuation. For example, if you search for **solid-state**, IEEE *Xplore* looks for “solid-state”, “solid state”, and “solid_state”, as well as any other occurrences of “solid state” with punctuation between the two words.
- **Special characters:** In IEEE *Xplore*, the following characters have special meaning in free-form search queries, so do not use them in your search keywords:

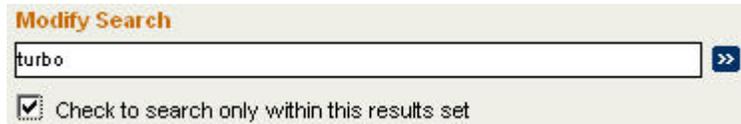
, () @ [] { } < >

Revising a Search

If the search results you receive from using Advanced Search consist of too many or too few documents, you can revise the search query to improve the results. Below are ways to revise the search query. See [Narrowing a Search](#) and [Broadening a Search](#) for strategies on improving search queries.

To search within the current search results:

- Enter additional keywords into the **Modify Search** box, click the checkbox for **Check to search only within this results set**, and click . For example:



To modify the existing search query:

- Return to your original search page using your browser's **Back** button and edit the search query.

To start a new search:

- Enter a new query in the text box on the search results page and click .
- or
- Click [New Search](#) on the search results page to display a blank Advanced Search page, where you can enter a new query.

Searching for an Exact Word or Phrase

To search for an exact match, enter the search word or phrase in quotation marks. For example, if you enter the following search word:

“cable”

IEEE Xplore looks for matches in any record containing the exact word *cable* in any field. It does not look for *cables*, *cabled*, or *cabling*.

Notes:

- If the text contains punctuation, replace each punctuation mark with a space.
- You cannot use the wildcard characters **?** and ***** within the quotation marks.
- IEEE Xplore matches the text you enter only if the record contains that text as a whole word or series of whole words. It does not match text within a word. (To match text within a word, use wildcard characters outside the quotation marks.)

Searching with Wildcard Characters

To search for words that have spelling variations or contain a specified pattern of characters, use **?** and ***** (called wildcard characters) to represent the variations.

- ?** Represents any single alphanumeric character in the position it occupies.
- *** Represents zero, one, or multiple alphanumeric characters in the position it occupies.

Notes:

- The ? wildcard can appear at the beginning of a word, in the middle of a word, or at the end of a word.
- The * wildcard can appear at the end of a word to find words with different endings, or in the middle of a word to find words containing a specified pattern of characters. The * wildcard can *not* appear at the beginning of a word.
- You cannot use ? or * within quotation marks when you specifying an exact match.
- Wildcard matching must match all characters explicitly specified. If you enter the keyword **cable**, IEEE *Xplore* also looks for records containing the stem variation **cabling**. If you enter **cable***, IEEE *Xplore* does not match **cabling**, because there is no **e** to match.
- The * wildcard can match words that are not the stem variations that normal IEEE *Xplore* searching matches. For example, **cable*** matches *cableguns* and *cableway*, but **cable** does not; it matches words with common suffixes such as **-ed**, **-es**, and **-ing**.

Examples:**cable?**

Matches any record containing six-character words such as *cables* or *cabled* in any field. Does not match *cable* (? must match one character), *cabling*, *cableguns*, or *cableway*.

t?re

Matches any record containing four-character words such as *tire*, *tyre*, or *tore* in any field. Does not match *tires* or *three*.

???agon

Matches *hexagon* or *paragon*. Does not match *pentagon*.

t?re*

Matches *tire* (in which * matches no characters), *tyre*, *tires*, *tyres*, *three*, and *threshold*.

m*n*

Matches *man*, *mean*, *median*, *moon*, *magnification*, *modification*, *management*, *mnemonic*, and any other word in which **m** is followed by **n**.

electro*

Matches *electron*, *electrons*, *electronic*, *electronics*, *electromagnetic*, *electromechanical*, *electrostatic*, and *electrolyte*.

optic* <in> de

Matches records containing *optic*, *optics*, or *optical* in the Index Terms field.

C3?.2*

Matches records containing *C37.20.2-1993*, *C37.20.2b-1994*, or *C37.26-1972* (IEEE standards).

Specifying Multiple Criteria

If you are searching for documents meeting any of several criteria, you need to define the relationship between your search strings using search operators. The following examples assume you are using structured Advanced Search (Option 1).

Specifying a combination of criteria:

To search for articles meeting a combination of criteria (for example, articles jointly written by M. Delgado and M.A. Vila), select the **And** operator to combine items. Your search results will list all articles meeting all criteria you specify. For example:

<input type="text" value="delgado m"/>	in	<input type="text" value="Author"/>
<input type="text" value="AND"/>	<input type="text" value="vila m.a."/>	in <input type="text" value="Author"/>

Specifying either of several criteria:

To search for documents meeting any one of the criteria, select the **Or** operator to combine items. Your search results will list all documents containing any of the items you specify. For example:

<input type="text" value="broadband wireless access"/>	in	<input type="text" value="Abstract"/>
<input type="text" value="OR"/>	<input type="text" value="bwa"/>	in <input type="text" value="Abstract"/>

In this example, IEEE Xplore finds documents that contain either the phrase **broadband wireless access**, or the abbreviation **BWA**, in the Abstract field.

Specifying the exclusion of criteria:

If you want to exclude an item from your search, use the **Not** operator. Your search results will include those documents that meet the first criteria, but exclude the second. For example:

<input type="text" value="acoustic imaging"/>	in	<input type="text" value="All Fields"/>
<input type="text" value="NOT"/>	<input type="text" value="water"/>	in <input type="text" value="All Fields"/>

In this example, IEEE Xplore finds documents that contain the phrase **acoustic imaging** in any field, but not the word **water**.

Nesting Search Operations

When a search query consists of multiple operations, you want to make sure IEEE Xplore performs the operations in the order you intend.

In Structured Advanced Search:

In structured Advanced Search (Option 1), the order of search operations is governed by the order of criteria in the search query boxes. If you use all three search query boxes, the expression formed by the first two boxes takes precedence over the entry in the third box (in other words, the first operator has precedence over the second).

For example, if you want to find all articles on **MIMO** written by both S. Haykin and K. Huber, you would enter the following search selections:

<input type="text" value="mimo"/>	in	<input type="text" value="All Fields"/>
<input type="text" value="AND"/>	<input type="text" value="haykin s"/>	in <input type="text" value="Author"/>
<input type="text" value="AND"/>	<input type="text" value="huber k"/>	in <input type="text" value="Author"/>

However, suppose you want to find articles by either of these authors about **MIMO**. If you specify:

mimo	in	All Fields
AND	haykin s	in Author
OR	huber k	in Author

IEEE *Xplore* finds articles by Haykin about **MIMO**, and all articles by Huber regardless of subject. That is, IEEE *Xplore* processes **And** operations first. (If you specify the **Or** condition first, using separate boxes, IEEE *Xplore* still processes the **And** operation first.) To instruct IEEE *Xplore* to process an **Or** operation before an **And** operation, enter the entire **Or** expression into a single box, using the <or> operator as follows:

haykin s <or> huber k	in	Author
AND	mimo	in All Fields
AND		in All Fields

This search query finds documents written by either Haykin or Huber (or both) that contain **MIMO** in any field.

In Free-Form Advanced Search:

In the free-form Advanced Search (Option 2), use parentheses to group elements as operations and to specify which operations take place before others. For example, in the search query:

mimo <and> ((Haykin S <in> au) <or> (Huber K <in> au))

IEEE *Xplore* performs the **In** operations first, the **Or** operation second, and the **And** operation third. That is, it looks for records containing either **Haykin S** or **Huber K** in the author field, plus the word **MIMO** in any field. Without the parentheses, the search query would be:

mimo <and> Haykin S <in> au <or> Huber K <in> au

In this case, IEEE *Xplore* looks for documents about **MIMO** by **Haykin** and all documents by **Huber**, regardless of subject. It processes the search query from left to right, as if parentheses surrounded “mimo <and> Haykin S <in> au”.

Searching with Incomplete Information

Here are some tips when you have limited information with which to begin a search, but want to minimize the time you spend searching.

If you do not know the exact spelling of an author's name:

- Using Author Search, type the beginning letters of the author's name in the **Quick Find** box. Click  and scan the resulting author list for a name you recognize.

or

- Using Advanced Search, type as many letters as you know of the author's name in the first text box, and use wildcard characters to specify letters you do not know or are unsure of. Then click  and scan the search results for a name you recognize.

If you do not know the full title of a publication:

- Select the collection (**Journals**, **Conference Proceedings**, or **Standards**) under **BROWSE** in the navigation menu bar. Type as many words as you know from the publication title in the **Browse by keyword** box. Click **>>** and scan the results list for a title you recognize.

or

- Using Advanced Search, type as many words as you know from the publication title in the first text box and select **Publication Title** from the pull-down menu. Then select the **Or** operator, and enter keywords appropriate to your search in the second text box. Click **Run Search** and scan the search results for a title you recognize.

Narrowing a Search

Your first search attempt might produce a long list of results. To reduce the number of results and improve their relevance, you can narrow your search criteria in the following ways:

- Read the citations of relevant titles, looking for additional keywords related to your search. Then modify your search query to include those additional keywords.
- Select a specific collection or date range.
- Analyze the results list for relevant titles, and note recurring authors or publications. Then add an author or publication keyword to your search query using the **And** operator. (See Specifying Multiple Criteria.)

Note: Observe the guidelines for nesting search operations when you combine **Or** and **And** operators.

Broadening a Search

If IEEE Xplore finds few or no documents matching your criteria, you can broaden your search criteria to find more matches. Try these techniques:

- Search in full text:



- Add an alternative search term to your original specification, using the **Or** operator. (See Specifying Multiple Criteria.)
- Use truncation and the * wildcard character to specify additional variations of a search term.

Example: To find documents about **photosensitive** materials or **photosensitivity**, you can specify:

photosensitiv*

IEEE Xplore returns all matches containing words that begin with **photosensitiv**.

- Use the ? wildcard character to specify a single unknown or varying character in your search term.

Example: Suppose you know that someone named Gardner or Gartner wrote an article about the use of robots. You can specify **robots** for the subject term, and for the author you can specify:

Gar?ner

IEEE Xplore returns all documents about robots written by either Gardner or Gartner.

Working with Search Results

The Search Results page lists descriptions of documents that meet your search criteria. This page appears following a search using Basic Search, Advanced Search, Author Search, or Searching within a Publication.

The top of the Search Results page provides a search results summary. For example:

Results for "wireless standards <in> (tijn,au,ab,cs)"  
 Your search matched 93 of 1013592 documents.
 A maximum of 100 results are displayed, 25 to a page, sorted by Relevance in Descending order.

Order of search results: Search results are organized by relevance in descending order with 25 results per page. Users who log in can change these settings on the Advanced Search page under **Organize results**.

Format of search results: The Citation display format includes the document title, author(s)/editor(s), the publication title, and page numbers. Users who log in can select Citation & Abstract under **Display Format**, which displays 30 to 40 words of the document Abstract with each result.

Full-text access: The Subscriber icon  indicates documents where you have access to full text.

Collection descriptor: The last line of each result identifies the publisher of the document (IEEE or IEE), tells you whether a document appears in a journal (JNL), conference proceeding (CNF), or standard (STD), and provides choices for viewing the document content.

From the Search Results page, you can:

All visitors:

- Print the search results. Use the  printer friendly button to display just the search results for printing.
- Email the search results. Use the  e-mail button to open a separate **Email an IEEE Xplore Page** window. Fill in the fields and click .
- View multiple pages of results by using the result-range links, such as [26-50](#).
- View the Abstract of a specific article by clicking the [Abstract](#) link.
- For articles to which you do not have access:

IEEE Members: You can access full text by filing the documents in your IEEE Member Digital Library File Cabinet (if you subscribe) or by purchasing the documents.

If you belong to a **subscribing institution**: You can access full text by filing the documents in your institution's IEEE Enterprise File Cabinet (if your institution subscribes) or by purchasing the documents.

Other guests: You can access full text by purchasing the documents.

Institutional Subscribers and IEEE Members (login or access authentication required):

- View more detail for all results by choosing Citation & Abstract under **Display Format**.
- Select specific results to view on a separate page by clicking the checkbox (☑) before items and then clicking **View Selected Items**. The View Selected Items page appears, listing your selected search results in the Citation & Abstract format.
- If you have full-text access to all results on the page, the **Download Citations** choice appears. You can download citations for all items on the page.
- View the extended Abstract record for a document by clicking [AbstractPlus](#).
- Revise your search specification to generate broader or narrower results using the **Modify Search** query box.
- View a list of previous searches conducted during the current login session by clicking [View Session History](#). You can use this list to repeat a search.
- Start a new search by clicking [New Search](#).

Subscribers to the publication:

- View the list of references contained in a document by clicking [References](#). The list of references opens in a separate page.
- View the full text of a document to which you or your institution subscribes by clicking [PDF](#). If IEEE does not hold copyright to the document or the document is not available in IEEE *Explore*, instead of this link you will see [\[Buy Via Ask*IEEE\]](#), which you can click to purchase the document.

Viewing Selected Search Results

The View Selected Items page displays a subset of your search results. To return from this page to your full search results, click [View Search Results](#).

From the View Selected Items page, you can:

Institutional Subscribers and IEEE Members (login or access authentication required):

- Print the page. Use the  printer friendly button to display just the selected results for printing.
- Email the list of selected items. Use the  e-mail button to open a separate **Email an IEEE Xplore Page** window. Fill in the fields and click **Send**.

- View the extended Abstract record for a document by clicking [AbstractPlus](#).
- For articles to which you do not have access:

IEEE Members: You can access full text by filing the documents in your IEEE Member Digital Library File Cabinet (if you subscribe) or by purchasing the documents.

If you belong to a **subscribing institution:** You can access full text by filing the documents in your institution's IEEE Enterprise File Cabinet (if your institution subscribes) or by purchasing the documents.

Other guests: You can access full text by purchasing the documents.
- If you have full-text access to all results on the page, the **Download Citations** choice appears. You can download citations for all items on the page.

Subscribers to the publication:

- View the list of references contained in a document by clicking [References](#). The list of references opens in a separate page.
- View the full text of a document to which you or your institution subscribes by clicking [PDF](#). If IEEE does not hold copyright to the document or the document is not available in IEEE *Explore*, instead of this link you will see [Buy Via Ask*IEEE](#), which you can click to purchase the document.

Adjusting the Search Results Format

On the search results page, users who log in can adjust the search results format by choosing between the **Citation** format and the **Citation & Abstract** format.

Display Format: Citation Citation & Abstract

- The **Citation** format displays the document title, author(s)/editor(s), the publication title, and page numbers.
- The **Citation & Abstract** format displays 30 to 40 words of the document Abstract with each result.

To change the sort order or number of results per page, click your browser **Back** button and make the appropriate selections under **Organize results**. Then click  to repeat the search with the format adjustments.

Search Examples

Structured Advanced Search Examples (Option 1)

Suppose you want to find articles about **broadband wireless access** technology.

1. Hover on or click **SEARCH** and then click **Advanced**.
2. You can construct a search query that searches for the phrase **broadband wireless access** in all fields:



OPTION 1

Enter keywords or phrases, select fields, and select operators

broadband wireless access	in	All Fields
AND		All Fields
AND		All Fields

Run Search Reset

3. You can expand this search to a full-text search by selecting **Full Text & All Fields**:



OPTION 1

Enter keywords or phrases, select fields, and select operators

broadband wireless access	in	Full Text & All Fields
AND		All Fields
AND		All Fields

Run Search Reset

4. Suppose you want only articles with this topic in their title. In addition, you know that the term is sometimes abbreviated to **BWA**. You can look for either topic in the document title by using the **Or** operator as follows:



OPTION 1

Enter keywords or phrases, select fields, and select operators

broadband wireless access	in	Document Title
OR	bwa	Document Title
AND		All Fields

Run Search Reset

Limiting Records Searched:

To limit this search to the IEEE Periodicals collection (journals, magazines, and transactions), deselect the other choices under **Publications**.

» **Publications**

Select publications

IEEE Periodicals

IEE Periodicals

IEEE Conference Proceedings

IEE Conference Proceedings

IEEE Standards

Also, you can narrow the search to a specific date range by using **Select date range**. See “Limiting a Search to Specific Years” for more information.

Free-Form Advanced Search Examples (Option 2)

Suppose you want to find articles about **broadband wireless access** technology.

1. Hover on or click **SEARCH** and then click **Advanced**.
2. You can use the free-form area to enter a search query that searches for the phrase **broadband wireless access** in all fields:

➤ **OPTION 2**

Enter keywords, phrases, or a Boolean expression

broadband wireless access

Run Search

Reset

3. You can expand this search to all fields and full text as follows:

➤ **OPTION 2**

Enter keywords, phrases, or a Boolean expression

broadband wireless access <in> (metadata,
pdfdata)

Run Search

Reset

4. Suppose you want only articles with **broadband wireless access** in their title. In addition, you know that the phrase is sometimes abbreviated to **BWA**. You can look for either topic in the document title by using the **Or** operator as follows:

OPTION 2

Enter keywords, phrases, or a Boolean expression

```
(broadband wireless access<in>ti) <or>
(bwa<in>ti)
```

Run Search

Reset

Limiting Records Searched:

To limit this search to the IEEE Periodicals collection (journals, magazines, and transactions), deselect the other choices under **Publications**.

Publications

Select publications

IEEE Periodicals

IEE Periodicals

IEEE Conference Proceedings

IEE Conference Proceedings

IEEE Standards

Also, you can narrow the search to a specific date range by using **Select date range**. See “Limiting a Search to Specific Years” for more information.

Complex Free-Form Advanced Search Examples (Option 2)

In free-form advanced search (Option 2), you can specify and perform more complex searches than you can using structured advanced search (Option 1). You can use many search terms and a variety of search operators, and you can control the order in which to evaluate expressions.

Using logical operators and parentheses:

You create more complex queries using free-form advanced search by joining search expressions with logical operators and using parentheses to group and prioritize parts of the query. Although parentheses are not always required, they help you to see the structure of your query more clearly, and may make it easier for you to edit the query.

Here is an example of a more complex query:

```
(<or>(rfid,radio frequency identification)) <and>
(<or>(privacy,security))
```

With some operators, like the two **<or>** operators in the example, you can enter the operator only once and follow it with a list of the search terms it operates on. This form makes it a little easier to create and read search expressions.

Using other operators and modifiers:

In free-form advanced search, you have access to operators you cannot use in structured advanced search, such as **<near>**, **<order>**, and **<many>**.

Here is an example of a complex query using these operators:

<many>(<order>(<and> (moon, man, vehicle)))

First, a record must contain some variation of all three terms before it can match. Then, those three terms must appear within the record in the order shown. After all matching records are found, IEEE *Xplore* assigns a score to each one, so that you can sort them by score and view together those with dense occurrences of these terms.

Author Search Examples

Suppose you want to find a conference paper by J.R. Tuttle about RFID (radio frequency identification) technologies. Here are three ways you perform an author search in IEEE *Xplore* to find the paper:

- Using Author Search
- Using Structured Advanced Search (Option 1)
- Using Free-Form Advanced Search (Option 2)

Using Author Search

1. Hover on or click **SEARCH** and then click **Author**.
2. Enter the author's last name and first initial in the box.

OPTION 1
Quick Find an Author:
 Enter a name to locate articles written by that author.
 >>

3. Select the author from the list of results.

Select a name to view articles written by that author

[Tuttle J.](#) [Tuttle J. A.](#) [Tuttle J. E. B.](#)
[Tuttle J. O.](#) [Tuttle J. R.](#)

4. If the list of documents is long, perform a search within the results.

Modify Search
 >>
 Check to search only within this results set
Display Format: Citation Citation & Summary

Using Structured Advanced Search (Option 1)

1. Hover on or click **SEARCH** and then click **Advanced**.
2. Construct a search query that searches for **Tuttle J** in the author field and **RFID** in the document title field.



OPTION 1

Enter keywords or phrases, select fields, and select operators

tuttle j	in	Author
AND		rfid
	in	Document Title
AND		
	in	All Fields

Run Search Reset

Using Free-Form Advanced Search (Option 2)

1. Hover on or click **SEARCH** and then click **Advanced**.
2. Construct a free-form search query that searches for **Tuttle J** in the author field and **RFID** in the document title field.



OPTION 2

Enter keywords, phrases, or a Boolean expression

```
(tuttle j<in>au) <and> (rfid<in>ti)
```

Run Search Reset

Working with Abstract and AbstractPlus Records

Abstract and AbstractPlus Pages

The Abstract page provides full Abstract records for most documents, including the title, author(s), publication identity, and page numbers, which are also listed on the Search Results page. Everyone can view an Abstract.

Logged-in users can view the AbstractPlus page. It provides additional information; see “Abstracts and AbstractPlus” for more information.

From the Abstract page, you can:

- Read the full bibliographic citation for the document.
- Read the full Abstract.
- Print the page.
- Access full text:

IEEE Members: You can access full text by filing the document in your IEEE Member Digital Library File Cabinet (if you subscribe) or by purchasing the document.

If you belong to a **subscribing institution:** You can access full text by filing the document in your institution’s IEEE Enterprise File Cabinet (if your institution subscribes) or by purchasing the document.

Other guests: You can access full text by purchasing the document.

If you see the **login area** at the side of the Abstract page, log in to access the AbstractPlus page.

From the AbstractPlus page, you can:

- Read the full bibliographic citation and Abstract for the document.
- See occurrences of the search terms you specified, indicated by **words shown in red**.
- Print or email the page.
- Access full text:

Subscribers to the publication: Click [PDF](#) to view full text.

IEEE Members who do not subscribe to the publication: You can access full text by filing the document in your IEEE Member Digital Library File Cabinet (if you subscribe) or by purchasing the document.

If you belong to a **subscribing institution:** You can access full text by filing the document in your institution’s IEEE Enterprise File Cabinet (if your institution subscribes) or by purchasing the document.

Other guests: You can access full text by purchasing the document.

- Search on author names conveniently by clicking the live author-name links.
- Search on subject terms conveniently by clicking the live index-term links.
- View the list of references in the document, if available, and view the individual Abstracts and full text for each reference (available to publication subscribers).
- View a referenced document if it is available via a CrossRef link to the publisher's web site.
- View the list of documents that cite the current document, if available, and view the individual Abstracts and full text for each document (available to publication subscribers).
- Download the document citation by choosing the citation format and file format in the **Download this citation** area.
- Arrange for rights and permissions by clicking  , which takes you to the Copyright Clearance Center's Rightslink electronic permissions service page.
- View the table of contents for the publication containing the article by clicking [View TOC](#) .
- View the next or previous article or paper in the publication by using [◀ Previous Article](#) | [Next Article ▶](#) .

The Abstract record has "Not Available" in the Abstract section if it represents one of the following:

- An interim IEEE-created record that will be replaced when the final INSPEC bibliographic record is available.
- An IEEE-created record for a document (such as a letter to the editor, paper submission guidelines, or a new product review) for which INSPEC supplies no bibliographic record.
- Reprint articles for which IEEE does not hold copyright. However, you can purchase these articles by clicking the [Buy Via Ask*IEEE](#) link.

Downloading Citations

The **Download this citation** area on the AbstractPlus page enables you to download Abstract records into your bibliographic management program, such as EndNote. This feature aids you in collecting pre-formatted citation information for future reference needs.

To download Abstract information:

1. Select **Citation** or **Citation & Abstract** in the Download field.
2. Select **EndNote, ProCite, RefMan** or **ASCII Text** in the File Format field.
3. Click . The following occurs:
 - If you chose **EndNote, ProCite, RefMan** format, a File Download dialog box appears which allows you to either open the file or save it to disk. Choose a method and click **OK** to complete the download.
 - If you chose **ASCII Text** format, the text appears in a new browser window for you to read or copy and paste into another location.

Arranging for Rights and Permissions

The Copyright Clearance Center's Rightslink electronic permissions service offers users the opportunity to obtain near-instant rights to reuse IEEE-copyrighted material in books, journals, magazines, newsletters, CD- or DVD-ROMs, brochures/pamphlets, coursepacks and classrooms.



When you click  on a document's AbstractPlus page, the CCC Rightslink page opens. It explains the terms for obtaining reuse rights. After you have read the information, you can continue the process by clicking . A separate Rightslink page opens to guide you through the process.

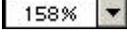
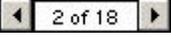
Working with Documents

Viewing a PDF Document

IEEE *Xplore* uses Adobe Acrobat Reader to present complete full-page images of documents in PDF format. These images show all text and illustrative material, as published. Click [PDF](#) on a Search Results, Abstract or AbstractPlus, or Table of Contents page to view the full text of the document.

Note: Viewing a full-text PDF is available to the publication's subscribers, for documents filed in either the IEEE Member Digital Library File Cabinet or the IEEE Enterprise File Cabinet, or for purchased documents.

When viewing a PDF document, you can:

- View the displayed document page, using:
 -  to enlarge the image size
 -  to decrease the image size
 -  to view the image at 100%
 -  to select a specific image viewing size
- Move the document page on the screen by holding down the left mouse button as you move the cursor over the page image. The cursor appears as a hand ().
- View the next pages of the document by clicking .
- View the last page of the document by clicking .
- Return to previous pages of the document by clicking .
- Return to the first page of the document by clicking .
- Go to a specific page by clicking  in the lower-left corner and either entering a number or clicking an arrow to go forward or go back one page.
- Print the entire article or the current page by clicking the  button.

Viewing HTML Full-Text

If a document is available in HTML full-text format, you can click the [HTML](#) link in the search results listing or Abstract to view the document in HTML format. You need to log in as a subscriber to the publication to view the full text. Use your browser Print button to print the document.

Use your browser Back button to return to your search results or Abstract page.

Printing Documents

Most full-text documents available in IEEE *Xplore* are in PDF format. The *IEEE Spectrum* magazine and *Proceedings of the IEEE* also contain some articles in HTML full-text format.

To print the full text of a PDF document:

1. While viewing the PDF document, click  at the top of the page viewer window.
2. In the **Print** window, choose which pages to print by selecting **All pages** or specifying page numbers in the **Pages from** boxes.
3. Click **OK**. The selected pages are printed.

To print the full text of an HTML document:

1. While viewing the HTML document, click the **Print** button in your browser toolbar.
2. In the **Print** window, choose which pages to print by selecting **All pages** or specifying page numbers in the **Pages from** boxes.
3. Click **OK**. The selected pages are printed.

Filing Documents in the IEEE Member Digital Library (IEEE Members)

If you subscribe to the IEEE Member Digital Library, you can file and access up to 25 documents each month that are not part of your online subscriptions. The documents you can file must be in IEEE journals, magazines, transactions, letters, or conference papers.

To file a document in your IEEE Member Digital Library File Cabinet:

1. In the search results list or the AbstractPlus record, click [PDF](#) to access full text for the document. If the publication is not part of your subscription, you receive a message asking if you want to file the document, similar to this example:

Would you like to add this document to your IEEE Member Digital Library File Cabinet?

By clicking **Add to File Cabinet**, the document will be added to your total documents filed for the month.

Protecting privacy in remote-patient monitoring

Kara, A.
Computer
Volume 34, Issue 5, Date: May 2001, Pages: 24 - 27

Add to File Cabinet **Cancel**

In the **Account Information** section, you can see how many documents are already filed in your IEEE Member Digital Library File Cabinet and how many more you can file for the current month.

2. Click **Add to File Cabinet** to file the document in your IEEE Member Digital Library File Cabinet.

Note: You cannot undo the action of storing an article in the File Cabinet.

An updated view of your IEEE Member Digital Library File Cabinet appears.

If you see the message, “The document you have selected was previously downloaded to your File Cabinet”, you can view the document you just filed by opening your IEEE Member Digital Library File Cabinet and clicking [PDF](#) below the document citation.

Filing Documents in the IEEE Enterprise File Cabinet

To file a document in your institution’s IEEE Enterprise File Cabinet:

1. In the search results list or the AbstractPlus record, click [PDF](#) to access full text for the document. You receive a message asking if you want to file the document, similar to this example:

Would you like to add this document to your IEEE Enterprise File Cabinet?

Select **Add to File Cabinet** to download the document.

A system scenario for wireless broadband access with multimedia support

Mikkonen, J.; Niemi, M.; Nieminen, P.

Universal Personal Communications Record, 1997. Conference Record., 1997 IEEE 6th International Conference on Volume 2, Issue -, Date: 12-16 Oct. 1997, Pages: 780 - 784 vol.2

Add to File Cabinet

Cancel

In the **Account Information** section, you can see how many documents are already filed in your IEEE Enterprise File Cabinet.

2. Click [Add to File Cabinet](#) to file the document in the Enterprise File Cabinet.

Note: You cannot undo the action of storing an article in the File Cabinet.

An updated view of the IEEE Enterprise File Cabinet appears.

If you see the message, “The document you have selected was previously downloaded to your File Cabinet”, you can view the document you just filed by opening your IEEE Enterprise File Cabinet and clicking [PDF](#) below the document citation.

Purchasing a Document

When you click [PDF](#) to view an article, if you do not subscribe to the publication in which it appears, IEEE *Xplore* displays a login page. Below the login area is the IEEE Article Purchase area.

1. To begin the purchase process, click [Buy this document now](#).

IEEE *Xplore* displays the IEEE Article Purchase page. This page confirms that you do not subscribe to the article, presents the citation for the article you are purchasing, and provides the price of the article. It also indicates how you may access the article after you complete your purchase.

2. Click [Buy this document now](#) to continue the process. IEEE *Xplore* presents the IEEE Article Purchase form.
3. Complete the form. Be sure to click the checkbox indicating you accept the terms and conditions.
4. Click [Submit](#) to complete the transaction (click it only *once*).

An email confirmation will be sent to you indicating the web address for downloading the full text of the document you purchased.

IEEE Xplore Messages

A denial message appears when you attempt to use a feature or view a document that you are not allowed to access given your current login status.

Login Messages and Denials

Login Denial

Most users need to log in to gain access to search functions and documents. (See “Do I Need To Log In?” for detailed information about whether you need to log in.) If you are presented the Login page, and you are:

A Non-Member/Guest You do not need to log in. You can perform a Basic Search of all brief Abstracts and access all tables of contents and brief Abstracts of all content available in IEEE Xplore.

An IEEE Member Have you set up a username and password? IEEE members need to establish an IEEE Web Account before they can log in. Or, you may be attempting to access content for which you do not have a subscription. Click [Access Information](#) at the top to see which publications are in your subscription.

Employed by an IEEE Subscribing Institution Are you required to log in to view your institution’s subscriptions? Some institutions are identified by IP address. Check with your librarian or system administrator. Are you using your institution’s username and password? Check with your system administrator or librarian to verify that it is correct. Finally, you may be attempting to access content for which your institution does not have a subscription. Click [Access Information](#) at the top to see which publications are in your institution’s subscription.

Invalid Login

IEEE *Xplore* did not recognize the username and password combination you entered. Please try again, using these guidelines:

- Usernames and passwords are case sensitive. Be sure the CAPS LOCK key is not depressed, and enter the username and password using the correct case.
- If you are copying and pasting your username or password from another source, be sure you are not including any extraneous characters, such as a trailing space.

If you are an IEEE Member and your IEEE Web Account username and password is not recognized, please contact IEEE member services at member-services@ieee.org for assistance.

Already Logged In

You have entered a username and password while already logged in to IEEE *Xplore*. Your existing session will be replaced when you log in again, and recent searches in your session history will be deleted.

Enter your login information to continue beginning a new session, or use your browser Back button to return to your previous session.

Request Invalid

A denial message appears if you attempt to view full text without authorized access. If you attempted to view full text and were denied, and you are:

A Non-Member/Guest	You do not have access to full texts.
An IEEE Member	<p>You have access to the full text of <i>IEEE Spectrum</i>, any personal IEEE online subscriptions, any articles eligible for filing in your IEEE Member Digital Library File Cabinet (IEEE Member Digital Library subscribers only), and any articles available for single article purchase. If you receive a denial message:</p> <ul style="list-style-type: none"> • Try logging out and in again. • Check that the document you are trying to access is included in your personal IEEE online subscriptions. • Consider filing the document in your IEEE Member Digital Library File Cabinet, if you are an IEEE Member Digital Library subscriber. • If you are employed by a subscribing institution and the document is part of the institution's subscription, log out of your IEEE Web Account and log into your institution's IEEE <i>Xplore</i> account to access the document. <p>Otherwise, please contact IEEE member services at member-services@ieee.org for assistance.</p>

**Employed by an IEEE
Subscribing Institution**

You have access to the full text of all documents in your institution's subscription package. If you receive a denial message:

- Try logging out and in again.
- Check that the document you are trying to access is included in your institution's IEEE online subscription.
- Consider filing the document in your IEEE Enterprise File Cabinet, if your institution subscribes.
- Consider purchasing the document you are trying to access, if [Buy this document now](#) appears at the bottom of the login area.

Otherwise, please contact customer support at onlinesupport@ieee.org for assistance.

Search Invalid

A denial message appears if you attempt to use one of the search functions — Author Search, Advanced Search, CrossRef Search Pilot, or Searching within a Publication — without authorized access. If you attempted to perform a search and were denied, and you are:

A Non-Member/Guest

You do not have access to these search functions. You can use the browse and Basic Search functions.

An IEEE Member

You have access to all search and browse functions. If you are having trouble accessing one of these functions, your login may have timed out. Try logging in again, or try logging out and in again. If you still have difficulty, please contact IEEE member services at member-services@ieee.org for assistance.

**Employed by an IEEE
Subscribing Institution**

You have access to all search and browse functions. If you are having trouble accessing one of these functions, your login may have timed out. Try logging in again, or try logging out and in again. If you still have difficulty, please contact your librarian or system administrator.

Otherwise, please contact customer support at onlinesupport@ieee.org for assistance.

View Abstract Denial

Anyone can view an Abstract without logging in to IEEE Xplore. If you view an Abstract and you are:

A Non-Member/Guest

You can view brief Abstracts but not the more detailed AbstractPlus.

An IEEE Member

You have access to detailed AbstractPlus records if you log in. If you think you are already logged in, try logging out and in again. If you are still having difficulty, please contact IEEE member services at member-services@ieee.org for assistance.

**Employed by an IEEE
Subscribing Institution**

You have access to AbstractPlus records of documents included in your subscription if you log in. If you think you are already logged in, try logging out and in again. If you are still having difficulty, contact your system administrator or librarian.

Otherwise, please contact customer support at onlinesupport@ieee.org for assistance.

Concurrency Denial

Your institution's subscription includes a limited number of concurrent connections. All connections are currently busy. Please try accessing IEEE Xplore again in a few minutes.

- You can browse tables of contents without logging in.
- If you are an IEEE Member, log in with your IEEE Web Account to access full text in your personal subscriptions.
- If you continue having difficulty logging in, contact your system administrator or librarian.

IEEE Member Digital Library Limit Exceeded

Your IEEE Member Digital Library File Cabinet already contains 25 documents for the current month. You cannot add any more documents to your File Cabinet until the first day of the next month.

If you are employed by an institution with an IEEE online subscription, you can log out and then log back in with your institution's login ID.

Alternatively, you may be able to purchase the document. Look for the  button.

Note: You cannot purchase the document in IEEE Xplore if it is an IEEE standard.

IEEE Enterprise Limit Exceeded

Your institution's File Cabinet already contains the maximum number of documents for its subscription. You can continue to access documents that are in the File Cabinet until the noted expiration date. To download additional documents, the institution's IEEE Enterprise account must be renewed.

Check with your institution's information professional or librarian to see if a copy of the document is available in your library.

If you are an IEEE Member and the document is in your personal subscriptions, you can log out and then log back with your IEEE Web Account to access the document.

Alternatively, you may be able to purchase the document. Look for the [Buy this document now](#) button.

Note: You cannot purchase the document in IEEE *Xplore* if it is an IEEE standard.

Glossary

A

Abstract: A summary of the contents of a document. The Abstract commonly explains the main points made in an article or paper, including the main theme, argument, process, and results.

Abstract record: A description of an article, paper, or standard that includes the following information: author name(s); editor name(s); title of the article, paper, or standard; title, volume/issue number, page number, and date of the publication in which the article or paper appeared and other identifying information including the ISSN or ISBN number.

AbstractPlus: The AbstractPlus page provides the same information as the Abstract page, plus: INSPEC accession numbers, live index terms for convenient keyword searching, live author links for convenient by-author searching, references with live links to documents, the Printer Friendly button, link to documents that cite the current document, download Citation capability, a Rightslink button that takes you to the Copyright Clearance Center's Rightslink electronic permissions service page, and where you can arrange for copy and use rights.

Access authentication: Verifying the identity of a user accessing IEEE *Xplore* based on the user's IP address.

Accession number, INSPEC: The record number created when the bibliographic record was added to the INSPEC database, a component of IEEE *Xplore*. All IEEE *Xplore* documents have a unique INSPEC accession number.

Adobe Acrobat Reader: The viewer software used by IEEE *Xplore* to display PDF (portable document format) documents.

Affiliation: The organization or company employing the author of an article or paper, or the corporate source if no personal authors are credited.

Alerts, email: Email messages that let you know when a publication you have specified is updated. Click the Alerts button to display instructions for setting up email alerts.

Alphanumeric character: Any letter A-Z or a-z, or any digit 0-9.

And operator: Indicates the relationship between your search criteria. And means results should match all criteria.

ANSI: The American National Standards Institute, an organization that coordinates U.S. voluntary standards for a wide range of business, public, and consumer areas.

Author: The author or presenter of the document as published. On the AbstractPlus page, you can click an underlined author name to search by that author.

Author list: A complete listing of all authors in the IEEE *Xplore* database, which can be accessed from the Author Search page. You can search by keyword or browse alphabetically through the list for a particular author. Clicking an author name returns a list of articles and papers by that author.

B

Back button: A button on the browser toolbar that enables you to go to the previously viewed page. For example, while viewing a list of search results, you can click the Back button to return to the search page that generated those results.

Browser: The viewing software through which you use IEEE *Xplore*. To read about browser requirements for using IEEE *Xplore*, see the IEEE *Xplore* Guide topic “What are the optimal system requirements for using IEEE *Xplore*?”.

Buy Via Ask*IEEE: The Buy Via Ask*IEEE link enables you to purchase articles for which IEEE does not hold copyright or if the document is not available in IEEE *Xplore*. This link appears on Abstract and/or AbstractPlus pages.

C

Case sensitive: Making a distinction between characters entered in uppercase (capital letters) and lowercase.

Catalog number: The IEEE Catalog Number for the document.

CODEN: A unique alphanumeric code assigned to serial and monographic publications and used as a permanent identifier. The CODEN system was developed in 1963 by the American Society for Testing and Materials for scientific and technical publications, but has since expanded in scope. In 1975, the Chemical Abstracts Service assumed responsibility for the assignment and dissemination of CODEN designations.

Colloquium: A meeting or conference, usually conducted by the IEE.

Conference date: Date of the conference where the paper was presented.

Conference proceedings list: A complete listing of all conference proceedings in the IEEE *Xplore* database which can be accessed from the Browse Conference Proceedings page. You can search by keyword or browse alphabetically for a particular conference. Clicking a conference title returns a list of volumes for that conference.

Conference title: The name of a conference or meeting.

Country: The country in which the conference was held.

D

Document: An article, paper, or standard stored as a record in IEEE *Xplore*.

Document title: The full title of the document as published, also referred to as document title. Conference paper titles and standard titles are also found under the generic term Document Title in IEEE *Xplore*.

Document type: The publication category of the documents in IEEE *Xplore*. CNF indicates conference proceedings, JNL indicates periodicals (journals, magazine, and transactions), and STD indicates standards.

E

Email alert: Email messages that let you know when a publication you have specified is updated. Click the Alerts button to display instructions for setting up email alerts.

End page: The ending page of the article within the publication.

F

Field: A specific type of information within an IEEE *Xplore* record. For example, the Author field, abbreviated au, contains the name of the author of the document.

Field codes: Abbreviations for fields that you use in free-form search expressions. You can access a list of field codes by clicking the Advanced Search page.

Fields menu: A pull-down menu on the Advanced Search page that allows you to select a specific field in which to search for the associated search text.

Full text: The complete text of an article, paper, or standard in its published form, including both the bibliographic descriptions and the articles themselves. In IEEE *Xplore*, full text is available in portable document format (PDF) files. Select content is available as full text in HTML files.

H

Help button: A link appearing at the bottom of IEEE *Xplore* pages that opens a help topic related to your current context.

I

IEL: IEEE/IEE Electronic Library: A digital library of all articles, conference papers, and standards published by IEEE and IEE since 1988, with select content from 1952.

Index (subject) term: A significant word used as a descriptor of the subject of an article or paper. On the AbstractPlus page, you can click an underlined index term to search for documents containing that term.

INSPEC: An English-language information service providing a bibliographic database of Abstracts compiled from scientific and technical literature, of which IEEE *Xplore* uses a subset.

ISBN: The International Standard Book Number: a four-part, ten-character identifying code given to a book (a non-serial literary publication) before publication. The four parts are: group identifier (e.g., national, geographic, language); publisher identifier; title identifier; and check digit. Started by British publishers in 1967, the standard book number has been an international standard since 1969. The numbering system is administered among cooperating publishers in participating countries by a standard book numbering agency. Most IEEE *Xplore* conference publications have a unique ISBN.

ISSN: The International Standard Serial Number: the international numerical code that identifies a serial publication, based on American National Standard Identification Number for Serial Publications, Z39.9-1971, and approved by the International Organization for Standardization as ISO 3297, International Standard Serial Numbering. The ISSN program became operative in the United States in 1971. Each IEEE *Xplore* transaction, magazine, and journal publication has a unique ISSN.

Issue list: The issue list appears in the Issues pull-down menu on the publication page. The most recent issues appear at the top. If you click a year, the list of recent issues is replaced by a list of issues for that year. Click an issue to access its table of contents.

Issue number: The number that uniquely identifies an issue of a periodical or newspaper.

Issue part number: The number that uniquely identifies part of an issue of a periodical or newspaper.

J

Journal: As used in IEEE *Xplore*, any serial publication such as a journal, transaction, letter, or magazine.

Journals list: A complete listing of all journals in the IEEE *Xplore* database, which can be accessed from the Browse Journals & Magazines page. You can search by keyword or browse alphabetically for a particular journal. Clicking a journal title returns a list of issues from that journal.

L

Latest Content Update: The Latest Content Update link on the IEEE *Xplore* Home page displays a page listing links to the added or updated journals and magazines, conference proceedings, and standards for the past four weeks. On that page, you can also view updates for the current and the past year.

Login ID: The username and password you use to log into IEEE *Xplore*.

Login link: A link located at the top of all IEEE *Xplore* pages that starts the login process. If you are already logged in, a “Welcome” message appears in the blue banner.

Logout link: A link located at the top of all IEEE *Xplore* pages that allows you to log out of IEEE *Xplore*.

M

Matches: Records that meet search criteria and are listed on the search results list.

Modify Search query box: An area that appears on the Search Results page, displaying the query just executed and letting you modify the query. After modifying the query, click the Go button.

N

Navigation menu bar: The row of choices (Browse, Search, IEEE *Xplore* Guide, Support) below the banner at the top of each IEEE *Xplore* page that provides links to pages in IEEE *Xplore*.

Nesting operations: The use of parentheses to specify the order in which IEEE *Xplore* processes the parts of a search query. Without any parentheses, IEEE *Xplore* processes free-form queries from left to right. With the use of parentheses, IEEE *Xplore* in parentheses before items outside parentheses, and processes items in the innermost pair of parentheses first.

Not operator: Indicates the relationship between your search criteria. Not means the results should not match this particular criterion.

O

Operator: A syntax element in search expressions that describes a relationship between criteria. Commonly used operators are And, Or, and Not.

Operators menu: A pull-down menu on the Advanced Search page that allows you to specify the relationship between several search strings using the And, Or, and Not operators.

Or operator: Indicates the relationship between your search criteria. Or means results should match any one or more criteria.

P

Password: Part of the information you enter in the Login area, in addition to your username. Passwords are case sensitive.

PDF: PDF (Portable Document Format) is a format that maintains the page layout, color, graphics, and typography of the original document as published. It can be viewed onscreen or printed from any type of computer, using the Adobe Acrobat Reader software.

Personal security identifier: A reminder word to help you recover your password if you forget it. You define this identifier when you set up an IEEE Web Account.

Printer friendly icon: An icon on the Table of Contents, Abstract/AbstractPlus, and Search Results pages that allows you to display the page in a format that is better for printing.

Publication date: The date of publication of the document.

Publication information: Information about the editorial board or staff for the journal selected. This area appears on the left side of the Publication page.

Publication name: The name of the publication in which an article or paper appears.

Publisher: The publisher of the document in which an article or paper appears.

Publisher location: The city and state or province in which the publisher of an article is located.

Q

Query: A single keyword, expression (keywords and operator), or combination of expressions that specifies criteria for locating records. Also referred to as a search string. In IEEE *Xplore*, you use Advanced Search to build search queries, using either the structured or free-form areas.

R

Record: The bibliographic information associated with each article, paper, and standard in the IEEE *Xplore* database.

Reference list: In the Abstract record, the bibliographic references for the article. An AbstractPlus displays hyperlinks to the referenced documents' Abstracts and PDF full-text if the document is in the IEEE *Xplore* database or available via a CrossRef link to the publisher's web site.

Relevance ranking: The determination of relevance of a search result to the query that generated it, according to the number of occurrences of the search term(s) in the resulting document.

Reset button: Clears the search query box (or boxes) so you can reenter your search criteria.

Result-range page links: Numbers such as 26-50 that appear at the top and bottom of each Search Results page, allowing you to go to additional results pages generated by the search.

Rightslink button: The Rightslink button displays the Rightslink page, where you can arrange for copy and use rights. This button appears on the AbstractPlus page.

S

Score: The relevance ranking based on the number of occurrences in the matching document of the search criteria you specified.

Search expression: A combination of search text, operators, and field codes that forms part of a search query.

Search query box: A text box on a search page where you enter your search query.

Search result: On the Search Results page, a description of a document stored in IEEE *Xplore* that matches the search criteria supplied using the Basic, or Advanced, or Author Search.

Search text: Words, partial words, and phrases you enter in a search query box to find matching information in IEEE *Xplore* database records. You can search for exact matches or variations of words and phrases. You can use field codes and search operators with your search text to form search expressions.

Standard number: The identifying number of an IEEE standard.

Standards list: A complete listing of all standards in the IEEE *Xplore* database which can be accessed from the Browse Standards page. You can search by standard number or keyword to locate a particular standard.

Start page: The starting page of the article within the publication.

Stem variation: The stem is the base word for which you are searching. IEEE *Xplore* normally searches for the stem and its variants (the “stem variations”, which include endings such as plurals, -ing, and -ed.

Subject term: A significant word used as a descriptor of the subject of an article or paper. On the AbstractPlus page, you can click an underlined index term to search for documents containing that term.

Subscriber icon: An icon that appears on lists of search results next to publications to which you or your institution subscribes.

T

Table of contents listing: A listing of an article, conference paper, or standard on the table of contents page of a publication volume. The listing contains the title, author (if applicable), and page number.

Truncation: Specification of part of a word, to which you add wildcard characters to represent the remainder of the word.

U

Username: Part of the information you enter in the Login area, in addition to your password. Usernames are case sensitive.

V

View Top 100: The View Top 100 link on the IEEE *Xplore* Home page displays a page that lists the most frequently requested documents during the current month.

Volume: The publication volume in which the article appears.

W

Wildcard character: A character used in search queries to represent one or more unspecified characters. The * wildcard character represents any or no characters and the ? wildcard character represents any single character.

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