



A warm welcome from IEEE Nuclear and Plasma Sciences Society (NPSS)

Stefan Ritt
Cape Town, July 2018



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IEEE 802.11

From Wikipedia, the free encyclopedia

IEEE 802.11 is a set of [media access control](#) (MAC) and [physical layer](#) (PHY) specifications for implementing [wireless local area network](#) (WLAN) computer communication in the 900 MHz and 2.4, 3.6, 5, and 60 GHz frequency bands. They are the world's most widely used wireless computer networking standards, used in most home and office networks to allow [laptops](#), [printers](#), and [smartphones](#) to talk to each other and access the Internet without connecting wires. They are created and maintained by the [Institute of Electrical and Electronics Engineers](#) (IEEE) LAN/MAN Standards Committee ([IEEE 802](#)). The base version of the standard was released in 1997, and has had subsequent amendments. The standard and amendments provide the basis for wireless network products using the [Wi-Fi](#) brand. While each amendment is officially revoked when it is incorporated in the latest version of the standard, the corporate world tends to market to the revisions because they concisely denote capabilities of their products. As a result, in the marketplace, each revision tends to become its own standard.

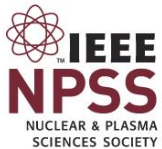


This [Linksys WRT54GS](#) WiFi router from 2005 operates on the 2.4 GHz "G" standard, capable of transmitting 54 megabits per second.

What is IEEE

Advancing Technology to the Benefit of Humanity

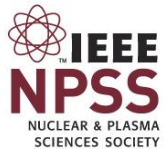
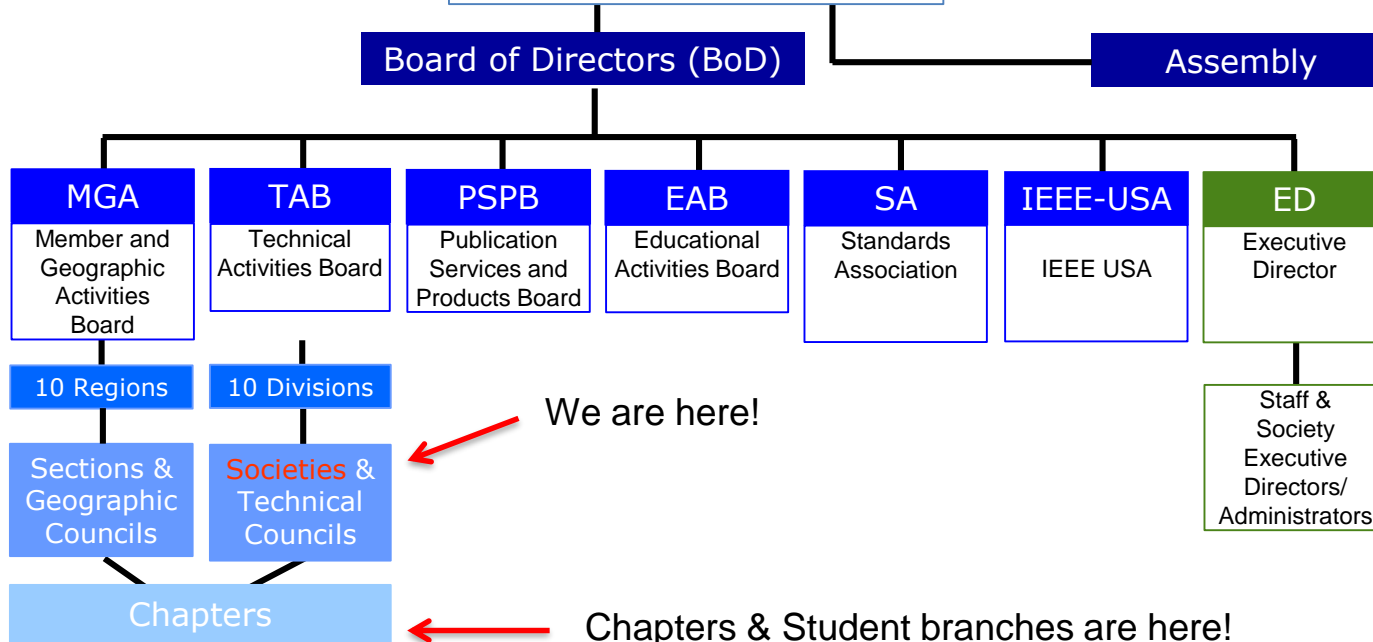
- ▶ Non-profit organization
- ▶ IEEE is the world's largest technical professional organization (> 400'000 members, >120'000 student members) dedicated to advancing technology for the benefit of humanity.
- ▶ Founded in US, now a global organization (more members outside the US than inside)
- ▶ Responsible for 1'300+ standards (such as WiFi)
- ▶ Host of 4M journal papers (<https://ieeexplore.ieee.org/>)
- ▶ Sponsor of 1800+ conferences per year in 98 countries
- ▶ 2000+ chapters, 3000+ student branches
- ▶ Sponsor of humanitarian projects (IEEE Smart Village)
- ▶ Sponsor of schools, Distinguished Lecturers Program, ...



IEEE Organizational Governance

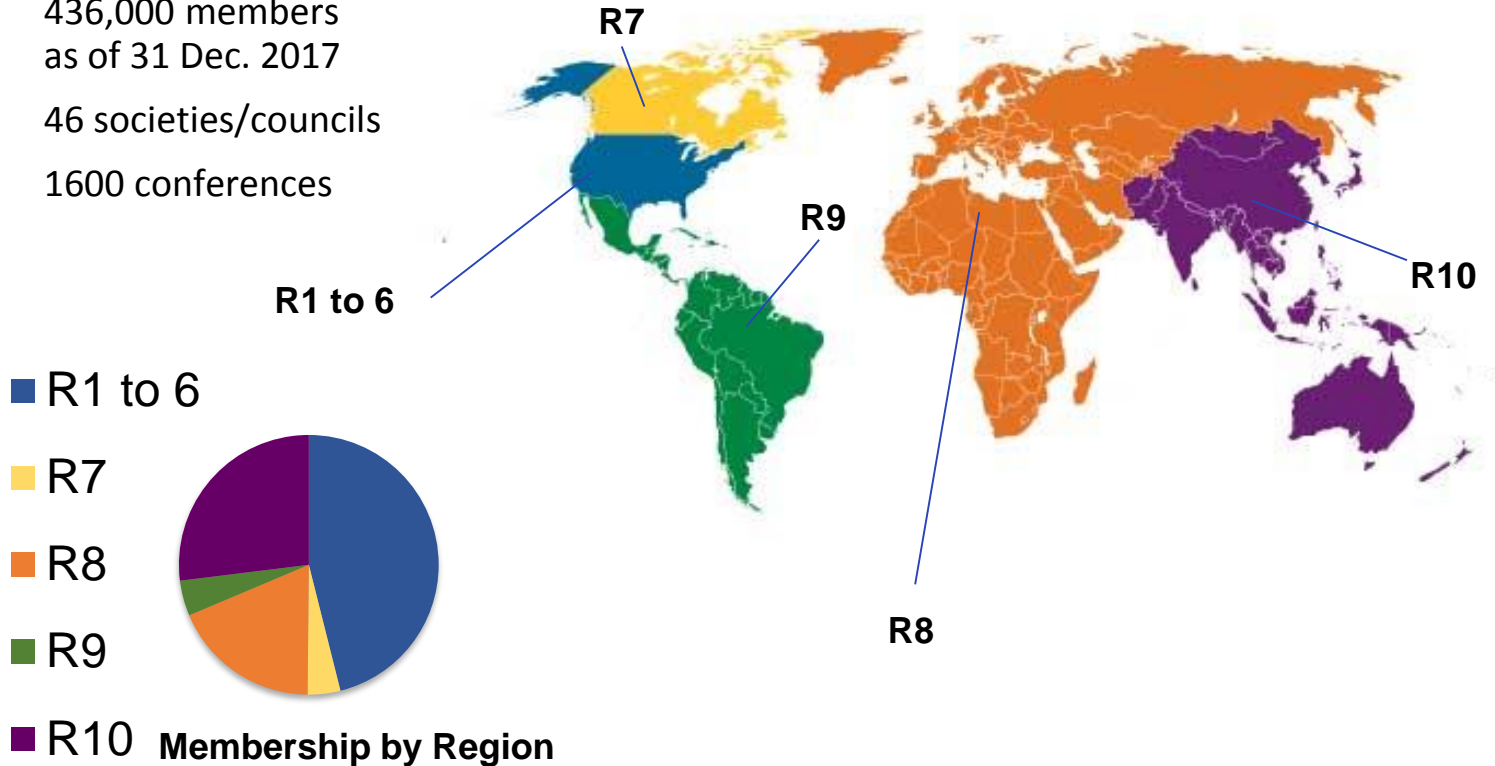


MEMBERS



IEEE Membership By Region

- ▶ 436,000 members as of 31 Dec. 2017
- ▶ 46 societies/councils
- ▶ 1600 conferences



IEEE Nuclear and Plasma Society

Who are we?

One of 39 IEEE societies

Website: <http://iee-npss.org>

Facebook: <https://www.facebook.com/ieeenpss/>

2500-3000 members in 19 countries

8 Technical communities



People working together, utilizing science and technology, expanding industry, furthering careers.

The fields of interest of the NPSS include Nuclear Science and Engineering (including radiation detection and monitoring instrumentation, radiation effects, nuclear biomedical applications, particle accelerators, and instrumentation for nuclear power generation), and Plasma Science and Engineering (including plasma dynamics, thermonuclear fusion, plasma sources, relativistic electron beams, laser plasma interactions, diagnostics, and solid state plasmas). The NPSS sponsors seven conferences and three peer reviewed journals.

- ▶ Learn about NPSS
- ▶ IEEE is ...
- ▶ NPSS is ...
- ▼ Message From The President



A warm welcome to the IEEE Nuclear and Plasma Sciences Society (NPSS) website. We are one of the IEEE's 39 societies and our focus is around eight Technical Committees. This web site gives you information about our society, our upcoming conferences, awards, chapters and local activities, our distinguished lecturers program and our publications. In addition, I would like to draw your attention to our Facebook page, where we regularly publish news and announcements. I am very grateful to those of you who have dedicated time and effort to our society as a volunteer, conference organizer, paper reviewer or in any other function. I would strongly encourage all others to contact me (Gordon@ieee-npss.org) or any of the Technical Committee or Functional Chairs to assist you in contributing to our society and thereby enriching your membership, if you publish in one

New Journal: Transactions on Radiation and Plasma Medical Sciences

Upcoming NPSS Conferences

Nuclear and Space Radiation Effects Conference [E2023](#)
16 – 20 July 2018 Waikoloa Village, HI, United States

2018 Asia-Pacific Conference on Plasma and Terahertz Science [E2023](#)
15 – 18 August 2018 Xian, Shaanxi, China

7th Euro-Asian Pulsed Power Conference with 22nd International Conference on High-Power Particle Beams [E2023](#)
15 – 20 September 2018 Changsha, Hunan, China

Radiation and Its Effects on Components and Systems [E2023](#)
16 – 21 September 2018 Gothenburg, Sweden

20th International Symposium on High Current Electronics [E2023](#)
16 – 22 September 2018 Tomsk, Russia

16th International Conference on Megagauss Magnetic Field Generation and Related Topics [E2023](#)
25 – 29 September 2018 Kashiwa, Chiba Prefecture, Japan

Nuclear Science Symposium and Medical Imaging Conference [E2023](#)
10 – 17 November 2018 Sydney, New South Wales, Australia

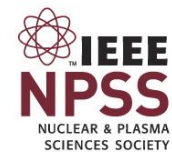
Symposium on Fusion Engineering
2 – 6 June 2019 Jacksonville, FL USA

Advancements in Nuclear Instrumentation Measurement Methods and Their Applications [E2023](#)
17 – 21 June 2019 Bernardin, Slovenia

Pulsed Power & Plasma Science Conference [E2023](#)
22 – 28 June 2019 Orlando, FL, United States



Looking for a Job?
Find the perfect job for you on the IEEE job board.



NPSS Technical Committees (TC)

The breadth of NPSS

- ▶ **Computer** Applications in Nuclear and Plasma Sciences (CANPS)
- ▶ **Fusion** Technology Committee (FTC)
- ▶ Nuclear **Medical Imaging** Sciences Committee (NMISC)
- ▶ Particle **Accelerator** Science and Technology (PAST)
- ▶ **Plasma** Science and Applications Committee (PSAC)
- ▶ **Pulsed Power** Science and Technology (PPST)
- ▶ **Radiation Effects** Committee (REC)
- ▶ **Radiation Instrumentation** Technical Committee (RITC)

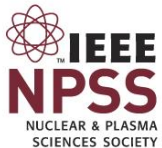
NPSS Journals

IEEE Transactions on Nuclear Science

IEEE Transactions on Plasma Science

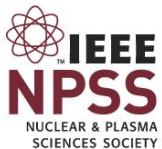
IEEE Transactions on Medical Imaging

IEEE Transactions on Radiation and Plasma Medical Sciences



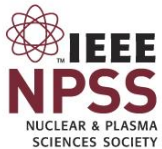
NPSS benefits for members

- IEEE NPSS Distinguished Lecture Program supports **chapters** and **student branches**
- IEEE/NPSS Members receive (partial list):
 - Significant discounts on registration rates for NPSS Conferences
 - Electronic access to NPSS Journals and Conference Records via [Xplore](#)
 - Reduced rates on print subscriptions to NPSS publications
 - Subscriptions to the monthly magazine *SPECTRUM* and *The Institute*, a monthly news supplement
 - Low rates on IEEE's many publications, discounted insurance rates ...
 - NPSS Newsletter published four times per year



Why become IEEE member?

- ▶ Students: US\$ 35 / year, full membership: US\$ 163 / year
- ▶ Full members from South Africa can obtain a 50% fee reduction (US\$ 82 / year)
- ▶ Networking is extremely helpful especially in the early stage of your career
 - Job opening database
 - Women in Engineering events
 - Collabratec (Facebook for engineers)
 - DataPort (Cloud storage for scientific data)
 - Become a volunteer (help reviewing papers, help running conferences, ...)
- ▶ Stay technical up-to-date (journals, conferences, online courses, ...)
- ▶ Need 12 members to form a **chapter** or 6 student members to form a **student branch**



Distinguished Lectures

The NPSS Distinguished Lecturers Program (DLP) sponsors the presentation of lectures at NPSS Chapter meetings as well as at IEEE Section and Student Chapter meetings.

In addition, NPSS Distinguished Lecturers are available for presentations to other IEEE entities as well as to non-IEEE organizations, such as universities and colleges.

NPSS Distinguished Lecturers are volunteers who are nominated by the NPSS Technical Committees based on distinguished stature and achievement within their technical communities.

To arrange a lecture, please contact the lecturer directly using the links provided below. For additional information, please contact the Distinguished Lecturers Coordinator [Dan Fleetwood](#).

Resources

[Distinguished Lecturer Bi-fold](#) – A brochure describing the NPSS Distinguished Lecturers program.

[NPSS DLP](#) – A statement of program guidelines and procedures.

NPSS DL [Introduction Slides](#) for Distinguished Lecturers to use.

Lecturers

Dr. Jean Paul Allain

University of Illinois

Challenges to a foundational understanding of the plasma-material interface in plasma-burning nuclear fusion reactors

Directed irradiation synthesis: manipulating matter in nanoscale self-organized systems

Dr. Janet L. Barth

NASA, retired

Space and Atmospheric Radiation Environments

The Space Environment from Low Earth Orbits to Deep Space

Dr. Stephen Bayne

Texas Tech University

Dr. Paul Lecoq

Senior Physicist at CERN, Geneva, Switzerland and Technical Director of European Center for Research in Medical Imaging in Marseilles

Development Of New Scintillating Crystals For High Energy Physics, Medical Imaging And Other Applications

Spin-Off From Particle Detectors In The Field Of Medicine And Biology

Metamaterials For Novel X Or Gamma Ray Detector Designs

Molecular Imaging Challenges With PET and SPECT Techniques

How to Improve Timing Resolution in Scintillators

Goals and Achievements of the EndoTOFPET-US FP7 Project

Dr. Patrick Le Du

Senior Scientific Advisor Institut National de Physique Nucleaire et de Physique des Particules, France

Application of Fundamental Physics Innovative Techniques and Tools to Other Fields

Innovative Concepts in Electronics and Data Acquisition for Biomedical Applications

Challenges of Particle Imaging for Hadron Therapy

Dr. John W. Luginsland

Principle Physical Scientist, Physics and Electronics Directorate Air Force Office of Scientific Research

Directed Energy – Advanced Technology for Defense at the Speed of Light

Prof. Dr. Abdallah Lyoussi

Experimental Physicist, French Atomic Energy and Alternative Energies Commission

Instrumentation and Measurement in Nuclear Environments