

**SPECIAL ISSUE**

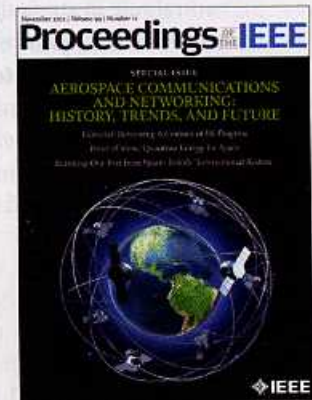
## AEROSPACE COMMUNICATIONS AND NETWORKING IN THE NEXT TWO DECADES: CURRENT TRENDS AND FUTURE PERSPECTIVES

*Edited by C. Sacchi, A. Jamalipour, and M. Ruggieri*

- 1840 1945–2010: 65 Years of Satellite History From Early Visions to Latest Missions**  
By B. G. Evans, P. T. Thompson, G. E. Corazza, A. Vanelli-Coralli, and E. A. Candreva  
| INVITED PAPER | This paper presents an overview of the history and present state of satellite communications and broadcasting and it provides a look at future satellite communications.
- 1858 EHF for Satellite Communications: The New Broadband Frontier**  
By E. Cianca, T. Rossi, A. Yahalom, Y. Pinhasi, J. Farserotu, and C. Sacchi  
| INVITED PAPER | The current state of research and technology in EHF satellite communications are discussed in this paper along with related future perspectives, applications, and services.
- 1882 Satellite Radiolocalization From GPS to GNSS and Beyond: Novel Technologies and Applications for Civil Mass Market**  
By C. Fernández-Prades, L. L. Presti, and E. Falletti  
| INVITED PAPER | The current and forthcoming GNSS and associated technologies are discussed from a mass-market perspective; hints are given about the future role of digital signal processing and the software-defined radio.
- 1905 The Future of Satellite TV: The Wide Range of Applications of the DVB-S2 Standard and Perspectives**  
By V. Mignone, M. Á. Vázquez-Castro, and T. Stockhammer  
| INVITED PAPER | Perspectives of digital TV and HDTV broadcasting are discussed in this paper, as are ongoing and future standardization activities and satellite hybrid and Internet Protocol TV.
- 1922 Aerospace Communications for Emergency Applications**  
By M. Berioli, A. Molinaro, S. Morosi, and S. Scalise  
| INVITED PAPER | Recent advancements and trends in the use of aerospace communications for emergency rescue applications are discussed, as are integration of aerospace facilities with terrestrial backbones and networks.
- 1939 The Role of High-Altitude Platforms (HAPs) in the Global Wireless Connectivity**  
By A. Mohammed, A. Mehmood, F.-N. Pavlidou, and M. Mohorcic  
| INVITED PAPER | The role of HAPs in providing global connectivity for future communications systems and services is discussed in this paper.
- 1954 Energy Efficiency and Satellite Networking: A Holistic Overview**  
By F. Alagöz and G. Gür  
| INVITED PAPER | Energy efficiency and satellite networking are reviewed in this paper, ranging from protocols for airborne satellite systems to mobile end-user terminals, and also the prospect of greener infrastructural systems.

**DEPARTMENTS**

- 1827 EDITORIAL**  
Reviewing a Century of Electrical Engineering Progress: Approaching 100 Years of Publication  
By R. Trew and J. Calder
- 1831 POINT OF VIEW**  
Quantum Energy for Space  
By L. Burgess, G. Bergstue, and R. Fork
- 1835 SCANNING THE ISSUE**  
Aerospace Communications and Networking in the Next Two Decades: Current Trends and Future Perspectives  
By C. Sacchi, A. Jamalipour, and M. Ruggieri
- 2075 SCANNING OUR PAST**  
The Origins of Behn's "International System"  
By A. P. Yuste
- 2079 FUTURE SPECIAL ISSUES/SPECIAL SECTIONS**



**On the Cover:** This month our cover depicts the Earth surrounded by orbiting communications satellites as we take a look at Aerospace Communications and Networking in the form of a retrospective review that considers the history, the current developments and trends as well as the technical prospects for the future.

[ Continued on page 1826 > ]



**SPECIAL ISSUE: Aerospace Communications and Networking in the Next Two Decades: Current Trends and Future Perspectives**

**1980 Delay- and Disruption-Tolerant Networking (DTN): An Alternative Solution for Future Satellite Networking Applications**

By C. Caini, H. Cruickshank, S. Farrell, and M. Marchese

| INVITED PAPER | Applications of DTN for future satellite networks are discussed in this paper, as well as the relationship between DTN and quality of service (QoS).

**1998 Load Balancing and QoS Provisioning Based on Congestion Prediction for GEO/LEO Hybrid Satellite Networks**

By H. Nishiyama, D. Kudoh, N. Kato, and N. Kadowaki

| INVITED PAPER | This paper describes a new load balancing and quality of service provisioning scheme for real-time and non-real-time traffic, based on a new congestion prediction scheme.

**2008 Design of Flower Constellations for Telecommunication Services**

By D. Mortari, M. De Sanctis, and M. Lucente

| INVITED PAPER | Design and optimization of systems for maximizing global coverage and network connectivity via intersatellite links and improving their performance are discussed in this paper.

**2020 Deep-Space Optical Communications: Future Perspectives and Applications**

By H. Hemmati, A. Biswas, and I. B. Djordjevic

| INVITED PAPER | Current technologies available for deep-space optical data transmission and networking are discussed in this paper, as well as ongoing experiments, future perspectives, and applications.

**2040 Future E-Enabled Aircraft Communications and Security: The Next 20 Years and Beyond**

By K. Sampigethaya, R. Poovendran, S. Shetty, T. Davis, and C. Royalty

| INVITED PAPER | This paper shows how the envisioned e-enabled aircraft play a central role in streamlining system modernization efforts; challenges, emerging solutions, and open problems are highlighted.

**2056 Reliability Options for Data Communications in the Future Deep-Space Missions**

By T. de Cola, E. Paolini, G. Liva, and G. P. Calzolari

| INVITED PAPER | Reliability options that are available for application in deep-space missions are surveyed in this paper.

**Proceedings of IEEE**

**On the Web**

[www.ieee.org/proceedings](http://www.ieee.org/proceedings)

Find the following information on our website.

[Preview Current Issue](#)

[Browse Future Issues](#)

[Subscribe](#)

[Submit an Article](#)

[Email the Editor](#)

[Browse/Purchase Articles](#)

[Look Back in History](#)

[Centennial Celebration News and Events](#)

[Classic Papers](#)



**On the Web**

[www.ieee.org](http://www.ieee.org)

**MEMBERSHIP**

Check out the many features available through the IEEE Membership Portal.

**PUBLICATIONS**

Find IEEE articles by using the search features of IEEE Xplore

**SERVICES**

The IEEE offers many services to Members, as well as other groups.

**STANDARDS**

The IEEE is the leader in the development of many industry standards.

**CONFERENCES**

Search for the ideal IEEE Conference, on the subject of your choice

**CAREERS/JOBS**

Find your next job through this IEEE service.