

SPECIAL ISSUE

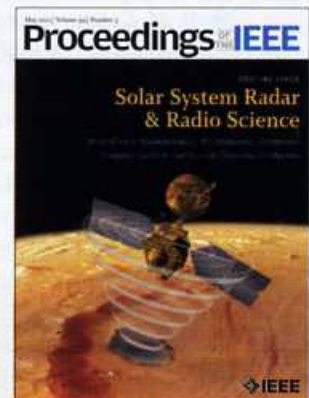
SOLAR SYSTEM RADAR AND RADIO SCIENCE

Edited by F. Davarian and C.-C. Lin

- 757 Goldstone Solar System Radar Observatory: Earth-Based Planetary Mission Support and Unique Science Results**
By M. A. Slade, L. A. M. Benner, and A. Silva
| INVITED PAPER | This paper discusses the only fully steerable radar for ranging and imaging planets and small objects in space; this is a very powerful tool for exploring the solar system.
- 770 Geologic Studies of Planetary Surfaces Using Radar Polarimetric Imaging**
By L. M. Carter, D. B. Campbell, and B. A. Campbell
| INVITED PAPER | Geologic studies of planetary surfaces by the world's largest radar, using polarimetric imaging, are discussed in this paper.
- 783 Uplink Arraying for Solar System Radar and Radio Science**
By F. Davarian
| INVITED PAPER | The feasibility of using an antenna array as a radar transmitter and of employing it for higher sensitivity observations is discussed in this paper.
- 794 The SHALLOW RADAR (SHARAD) Onboard the NASA MRO Mission**
By R. Croci, R. Seu, E. Flamini, and E. Russo
| INVITED PAPER | The Mars Reconnaissance Orbiter, looking for traces of life on Mars, seeks traces of water on or below the Martian surface.
- 808 The Lunar Mini-RF Radars: Hybrid Polarimetric Architecture and Initial Results**
By R. K. Raney, P. D. Spudis, B. Bussey, J. Crusan, J. R. Jensen, W. Marinelli, P. McKerracher, C. Neish, M. Palsetia, R. Schulze, H. B. Sequeira, and H. Winters
| INVITED PAPER | Mini RF radars onboard NASA's Lunar Reconnaissance Orbiter seek to acquire, for the first time, full polarimetric images of the Lunar surface.
- 824 WISDOM GPR Designed for Shallow and High-Resolution Sounding of the Martian Subsurface**
By V. Ciarletti, C. Corbel, D. Plettmeier, P. Caïs, S. M. Clifford, and S.-E. Hamran
| INVITED PAPER | A short-distance, ground-penetrating radar to be placed onboard a mission to Mars is designed to do subsurface imaging and help identify locations for retrieving useful samples.
- 837 Subsurface Radar Sounding of the Jovian Moon Ganymede**
By L. Bruzzone, G. Alberti, C. Catallo, A. Ferro, W. Kofman, and R. Orosei
| INVITED PAPER | This paper gives an overview of the radar designed to orbit Jupiter and investigate Jupiter's icy moons, which are suspected of hiding a liquid ocean below their thick ice shell.

DEPARTMENTS

- 751 POINT OF VIEW**
 Nanoelectronics: An International Perspective
By M. C. Roco and P. Gargini
- 753 SCANNING THE ISSUE**
 Solar System Radar and Radio Science
By F. Davarian and C.-C. Lin
- 906 SCANNING OUR PAST**
 Our Journal's Centennial Celebration
By J. Calder
- 910 FUTURE SPECIAL ISSUES/SPECIAL SECTIONS**



On the Cover: This month's cover shows the SHARAD Mars Reconnaissance Orbiter equipped with an instrument which seeks liquid or frozen water within the first few hundred feet under the Martian surface. (Image courtesy of : NASA/JPL).

[Continued on page 750 >]

SPECIAL ISSUE: Solar System Radar and Radio Science

858 Polarization in Bistatic Radar Probing of Planetary Surfaces: Application to Mars Express Data

By R. A. Simpson, G. L. Tyler, M. Pätzold, B. Häusler, S. W. Asmar, and A. K. Sultan-Salem

| INVITED PAPER | An experiment is described for obtaining radar scattering signatures of the surface of Mars by using a radio link transmitter and the Arecibo Observatory.

875 The Planned Space Science Utilizations of the New Sardinia 64-m Radio Telescope

By R. Ambrosini, S. W. Asmar, P. Bolli, and E. Flamini

| INVITED PAPER | A new ground station in Sardinia, Italy is described in this paper; the station can be used as a radio science tool with applications in radio astronomy and spacecraft tracking.

881 Detecting High Dynamics Signals From Open-Loop Radio Science Investigations

By M. Paik and S. W. Asmar

| INVITED PAPER | A processing approach with improved accuracy for the open-loop reception of radio science signals is described in this paper; it promises better quality science for high-dynamic signals.

889 A Prototype Radio Transient Survey Instrument for Piggyback Deep Space Network Tracking

By C. M. Buu, F. A. Jenet, J. W. Armstrong, S. W. Asmar, M. Beroiz, T.-H. Cheng, and J. A. O'Dea

| INVITED PAPER | This paper describes NASA's Deep Space Network (DSN) as a tool for making radio transient observations; DSN's low-noise large aperture antennas are suitable for surveying transients.

895 Smoothing Criteria for Regularized Matrix Inversion of Bistatic Radar Echoes

By H. M. Gunnarsdottir, I. R. Linscott, and H. Zebker

| INVITED PAPER | A processing scheme for bistatic radar observations of Mars using a ground-based transmitter and an orbiting receiver is designed to facilitate these observations.

Proceedings IEEE

On the Web

www.ieee.org/proceedings

Find the following information on our website.

- How to Subscribe
- Journal Description
- History
- Current Issue
- Special Issue Schedule
- Recent Highlights
- The Publication Process
- Information for Authors
- Reader Opinions and Suggestions



On the Web

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.