

***IEEE Transactions on Antennas and Propagation***  
**Announces a Special Issue on**  
**Antennas for Next Generation Radio Telescopes**

Radio telescopes are transitioning to a new generation of faster and more sensitive instruments, and technology demonstrators for projects such as the multi-billion dollar Square Kilometer Array (SKA) are undergoing rapid development internationally. These efforts have focused attention on research issues associated with novel antenna technologies for radio astronomy. The intention of the Special Issue is to describe some of the recent developments from these major worldwide radio astronomy instrumentation efforts with an emphasis on the antenna and radio frequency technologies.

Topics of interest include multi-pixel approaches based on broadband phased array aperture antennas and phased array feeds, broadband single-pixel feeds, numerical modeling, design optimization, array calibration, beamforming, and experimental results. It is anticipated that one of the main emphases will be the connection between electrical and electromagnetic antenna properties and the system-level performance requirements for efficiency, sensitivity, field of view, imaging dynamic range, and polarization purity. Various antenna configurations are under investigation, with the desire for continuous field of view, low system noise, and high aperture efficiency over wide bandwidths (2:1 or more). These comprise new antenna array concepts that achieve the performance requirements through optimal co-design of the antenna and low-noise front ends. This presents significant challenges in computational electromagnetics and in understanding the behavior of an array and its mutual interaction with low noise amplifiers (LNAs). Current research issues include the development of appropriate performance metrics and measurement techniques for strongly coupled, high sensitivity arrays, reducing the cost of construction, alignment and maintenance of these new instruments, low noise CMOS LNAs, integrated broadband receiver-on-a-chip, and active impedance matching. Papers on these topics and others related to antenna development for radio astronomy are solicited for the Special Issue.

Manuscripts should conform to the requirements for regular papers as specified in the Information for Authors on the inside back cover of the *IEEE Transactions on Antennas and Propagation* and the *Transactions* Web site (<http://www.ict.csiro.au/aps>). Potential contributors may contact the Guest Editors by e-mail (see contact information provided below) to determine the suitability of their contribution to the special issue. All invited and contributed papers must be submitted through the AP *Transactions* Manuscript Central Web site (<http://mc.manuscriptcentral.com/tap-ieee>), with a statement to the Editor-in-Chief of the *IEEE Transactions on Antennas and Propagation*, Dr. Trevor S. Bird, that they are intended for this Special Issue.

**Guest Co-Editors**

Prof. Karl F. Warnick  
Brigham Young University  
[warnick@byu.edu](mailto:warnick@byu.edu)

Dr. Marianna Ivashina  
ASTRON  
[ivashina@astron.nl](mailto:ivashina@astron.nl)

Dr. Stuart Hay  
CSIRO ICT Centre  
[stuart.hay@csiro.au](mailto:stuart.hay@csiro.au)

**Deadlines:**

**Paper Submissions November 30, 2009, Publication Date: December 2010**