



**CALL FOR PAPERS**  
**IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing**

**Special Issue on**  
**“Advances in Remote Sensing and Radar using Phaseless Apertures and Rydberg Quantum Arrays”**

Propagating waves have a phase component that varies temporally and a separate additive contribution to phase that depends on an observer’s spatial location. The spatial phase contains information such as angle of arrival while the temporal phase may embody the waveform’s modulation or Doppler shift. In many applications, a signal’s phase information is not available but must be reconstructed from the magnitude or intensity measurements of an impinging wavefield. Examples include Fourier ptychography in optics, X-ray crystallography, subdiffraction or non-line-of-sight imaging, and astronomy. Mathematically, phase retrieval is a very ill-posed problem and has been studied extensively. However, this topic is experiencing a resurgence due to its potential as an enabling technique for quantum and phaseless apertures as well as non-line-of-sight imaging. We would like to solicit high-quality manuscripts that describe new engineering or theoretical approaches for phase retrieval and complex signal reconstruction in sensing and imaging applications where only magnitude or intensity measurements are available. Topics of interest include but are not limited to:

The broad topics include (but are not limited to):

- Remote sensing and radar using phaseless synthetic apertures at millimeter-wave or radio frequencies
- Phase retrieval algorithms for Rydberg quantum arrays or optical synthetic apertures
- Phase retrieval in incoherent wavefields; phase retrieval with holographic methods
- Theoretical guarantees of correctness; Convex, non-convex and deep learning methods
- Image focusing and wave migration techniques for phaseless measurements
- Simultaneous retrieval of signal spatial and temporal phase from magnitude-only measurements
- Practical and reduced complexity phase retrieval approaches; Asymmetric sampling strategies
- High-resolution imaging; effects of noise, spatial multipath, clutter
- Relaxation techniques for optimization; Wirtinger flow algorithms
- Strategies that dither sensor orientation or transmit frequency to improve phase retrieval convergence
- Calibration effects; uncertainty and error analysis
- Maximum likelihood criteria; Bayesian and probabilistic inference techniques
- Experimental demonstrations and test beds
- High dimensional, tensor, low-rank techniques; Use of structural priors, sparsity information

**Schedule**

June 1, 2023 Submission system opening

December 31, 2023 Submission system closing

**Format**

All submissions will be peer reviewed according to the IEEE Geoscience and Remote Sensing Society guidelines. Submitted articles should not have been published or be under review elsewhere. Submit your manuscript on <http://mc.manuscriptcentral.com/jstars>, using the Manuscript Central interface and select the “**Advances in Remote Sensing and Radar using Phaseless Apertures and Rydberg Quantum Arrays**” special issue manuscript type. Prospective authors should consult the site <https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=9082768> for guidelines and information on paper submission. All submissions must be formatted using the IEEE standard format (double column, single spaced).

Please visit [http://www.ieee.org/publications\\_standards/publications/authors/author\\_templates.html](http://www.ieee.org/publications_standards/publications/authors/author_templates.html) to download a template for transactions. Please note that as of Jan. 1, 2020, IEEE J-STARS has become a fully open-access journal charging a flat publication fee \$1,250 per paper.

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