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**IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing**  
**Special Issue on “Advances in SAR Technology and Missions”**

Synthetic Aperture Radar (SAR) is in its golden age with a wide range of applications in Earth and planetary explorations. Advanced SAR satellites from space agencies and commercial companies, such as RADARSAT-2, COSMO-SkyMed and its Second Generation (CSG), TanDEM-X, Sentinel-1, ALDO-2, GaoFen-3, LuTan-1, Mini-RF, LRO, Chandrayaan-2, F-SAR, ICEYE, Capella, Synspective and Umbra, have provided valuable data enabling breakthroughs in many fields. More advanced airborne and spaceborne SAR missions have been proposed or are planned to be launched in the coming decade, such as NISAR, ROSE-L, Harmony, MirrorSAR, ALOS-4, CSG-2, Lunar Microwave Imaging Radar (LMIR) for Chang'e-7, etc. The development of SAR satellites shows a clear trend from high-resolution (HR) wide-swath (WS) to ultra-HR ultra-WS, monostatic to bi-/multi-static, single-/dual-polarization to full-polarization, and single-dimensional to multi-dimensional imaging.

The development of new SAR missions will unlock new capabilities and undoubtedly lead to major science and application advances: Higher-resolution, full-polarization SAR images contain more target information, which is valuable for accurate classification on planetary surfaces such as the Moon; Wider SAR images enables vast spatial coverage and fast satellite revisit, which is useful for rapid monitoring of wide-area moving targets, such as earthquakes, flooding, and other natural disasters; Distributed SAR images, with multi-angle scattering information about targets, can be used for millimeter-level deformation mapping, high-precision digital elevation model generation, vegetation and biomass evaluations; In addition, advanced signal processing methods need to be developed to fully exploit SAR images with higher resolution, wider swath, more diverse angles, higher SNR, and lower ambiguities. In short, advanced SAR missions will encounter many challenges during this development process, such as ultra-HR and ultra-WS SAR imaging, technical difficulties of distributed SAR, multi-dimensional coding suppression of ambiguity, elevation and azimuth multi-channel systems, and high-precision signal processing methods, etc.

This Special Issue aims to introduce the latest developments related to advances in SAR technology and missions, from concepts, and technologies to applications, such as novel SAR system designs, new SAR concepts, and systems, multi-dimensional signal processing, and related topics.

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

- Innovative concept and development for airborne/spaceborne SAR;
- Innovative airborne/spaceborne SAR techniques (e.g., antenna, RF subsystems);
- Present and future airborne and spaceborne SAR systems and missions;
- Small satellite SAR systems and techniques, new constellations, or intelligent constellations;
- Advances in TS-InSAR Pol-SAR and 3D/4D SAR;
- Advances in high-resolution wide-swath SAR imaging modes;
- SAR systems and missions for planetary exploration;
- New processing techniques and applications for Multidimensional SAR;

**Schedule**

Aug 1st, 2023 Submission system opening

May 31st, 2024 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 SAR Technology and Missions” special issue manuscript type. Prospective authors should consult the site <https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=8855039> 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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