Editor's note

Microwave imaging is an important tool for remote sensing, and has been widely used in such applications as agriculture, oceanic monitoring, forestry, topography mapping and military reconnaissance. The microwave imaging technology is facing a bottleneck, namely the increasing system complexity. As a new concept of microwave imaging theory, the sparse microwave imaging theory introduces the latest achievements in sparse signal processing to the radar imaging, combines them together to achieve the sparse representation of microwave imaging system and makes it possible to reduce the complexity and enhance the performance of microwave imaging systems. Sparse microwave imaging as well as related concepts is one of the frontier areas of research in recent years.

In a global view, the study of sparse microwave imaging was initiated after the compressive sensing theory was developed by mathematicians in 2006. In China, a great number of researchers from institutes and universities are engaged in sparse microwave imaging in recent years. The National Basic Research Program of China (973) "Studies on theory, system and methodology of sparse microwave imaging" started in 2009. Some achievements in this field have been gained by the Chinese scholars, a part of which are reported in this special issue.

This special issue on sparse microwave imaging involves the topics on fundamental theories of sparse signal processing, sparse SAR/ISAR imaging, and sparse microwave imaging system design, data acquisition, and image compression. Of course, this special issue only represents a small portion of the achievements of Chinese researchers in recent years. We hope it will play a valuable role in attracting more attention to sparse microwave imaging, and promoting the future development of related research fields.

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