

Personal information



First name, Surname: Jens Rosebrock
 Title: Dr.-Ing.
 Organization: FGAN



About the Author

Jens Rosebrock received his diploma at Technische Universität Hannover in 1983. He joined Philips to work in the area of image coding. In 1986 he began work at the University of Bremen on vector quantisation for image coding. He received his Dr.-Ing. degree in 1992. Subsequently he worked for the Daimler-Benz research centre at Ulm on radar image processing and image interpretation. Since 1997 he is working at FGAN-FHR on radar for space reconnaissance. He conducted space debris and meteoroid observation experiments and was involved in the radar observation part of ESA's Program for Radar and Optical Observation Forecasting (PROOF). He is currently working on ISAR imaging for space reconnaissance. This includes extracting 3D information from ISAR images of space objects and estimation of the space object's attitude, which is a closely related topic.

Research interest

ISAR imaging of space objects. 3-dimensional radar imaging. Attitude determination from ISAR images. Motion parameter estimation.

Summary

Advanced Mono- and Bistatic ISAR Techniques

The operating principle of ISAR imaging is reviewed. The processing chain for ISAR image generation is given including deramping, range profile alignment and autofocus. Several methods for higher order imaging are explained. It is shown that bistatic ISAR imaging can be reduced to an equivalent monostatic case if the plane wave assumption is valid. ISAR image restoration and superresolution algorithms are presented. Finally, methods for gathering of 3-dimensional information from ISAR images are discussed. This includes wire-frame models, a modified stereo imaging algorithm and interferometry. Attitude estimation, which is closely related to 3-dimensional imaging, is treated along with that item.