

IMPROVED SYSTEMS FOR BISTATIC BEAM-PARK EXPERIMENTS

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We report on future bistatic Beam-Park Experiments (BPE) for Space Debris Measurements as a joint project between the Research Establishment for Applied Science (FGAN) and the Max-Planck-Institut für Radioastronomie (MPIfR). A major research task of this ESOC funded project is the improvement of the knowledge of the particle environment which comprises both man made and natural objects. The location of the fully steerable 100-meter radio telescope in Effelsberg (MPIfR) makes it suitable for bistatic radar measurements together with the 34 meter parabolic antenna of the Tracking and Imaging Radar (TIRA) of FGAN in Wachtberg - only 20.4 km apart. These are the only European facilities capable of carrying out qualified BPE for space debris measurements.

A new 7-Beam L-Band Receiver and digital data collection system will give this system a sensitivity to detect orbiting objects of a minimum size of 9 mm at 1000 km slant range.

The multi-beam configuration will provide accurate position and size measurements of the objects. In addition to the system concept we present some technical details of the 7-Beam Receiver and the data collection architecture.