

Peter Elbau & Otmar Scherzer

Universität Wien

RADAR Imaging – A Mathematical Perspective

In this paper we explain with simple geometric arguments the appearance of diffraction hyperbolas in RADAR images. Moreover, we outline an inversion formula from integral geometry, which is derived using only elementary properties of the Fourier transform, to reconstruct the refractive index of a medium from RADAR data. The theoretical results of this paper are supported by real data from an industrial project.