Radar Image Processing with the Radon Transform

In a special type of synthetic aperture radar (SAR), using low frequencies and a large relative bandwidth, one encounters the problem of determining the reflectivity function of the ground from knowledge of its circular averages. This problem is closely related to computerized tomography and the Radon transform. In both cases an important step in the reconstruction consists of a ramp filtering of which a part is the Hilbert transform. These transforms are non-local and therefore very sensitive to noise. We show how it is possible to denoise and stabilize these transforms using wavelet based techniques.