

Abstract

In recent work sea clutter has been modeled as the product of two components. The first one, referred to as speckle, is modeled as a stationary Gaussian process. It is characterized by a short correlation time. The second component, referred to as texture, is modeled as a stationary or cyclostationary process. It is characterized by a long correlation time. Two approaches for the estimation of the texture are introduced here. The first approach involves the correlation properties of texture and speckle. The texture spectrum is modeled as an autoregressive (AR) process, while the texture range profile within one pulse repetition interval (PRI) is identified by combining the AR estimation of the sea clutter sample auto-covariance with the empirical orthogonal functions (EOF) analysis. The second approach involves a mixed ℓ_2 - ℓ_1 norm minimization criterion to account for the sparse harmonic structure of the texture, considered herein as a cyclostationary process within multiple coherent processing intervals