Complex Wishart distribution based analysis of polarimetric synthetic aperture radar data - DTU Orbit (08/08/2018)

**Complex Wishart distribution based analysis of polarimetric synthetic aperture radar data**

Multi-look, polarimetric synthetic aperture radar (SAR) data are often worked with in the so-called covariance matrix representation. For each pixel this representation gives a 3x3 Hermitian, positive definite matrix which follows a complex Wishart distribution. Based on this distribution a test statistic for equality of two such matrices and an associated asymptotic probability for obtaining a smaller value of the test statistic are given and applied to change detection, edge detection and segmentation in polarimetric SAR data. In a case study EMISAR L-band data from 17 April 1998 and 20 May 1998 covering agricultural fields near Foulum, Denmark, are used. Soon the Japanese ALOS, the German TerraSAR-X and the Canadian RADARSAT-2 will acquire space-borne, polarimetric data making analysis based on these methods important.

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