

Elektrotechnik-Elektronik-Informationstechnik

EEI KOLLOQUIUM

Polynomial Matrix Decompositions for Broadband Adaptive Beamforming

Dr. Stephan Weiss

University of Strathclyde, Schottland

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Polynomial matrices can help to elegantly formulate many broadband multi-sensor / multi-channel processing problems, and represent a direct extension of well-established narrowband techniques which typically involve eigen- (EVD) and singular value decompositions (SVD) for optimisation. Polynomial matrix decompositions extend the utility of the EVD to polynomial parahermitian matrices, and this talk presents a brief overview of such polynomial matrices, characteristics of the polynomial EVD (PEVD) and iterative algorithms for its solution. As an example, the use of these techniques is demonstrated for directly extending a narrowband minimum variance distortionless response beamformer to the broadband case, which offers lower complexity, and robust handling of arbitrary array configurations and constraints compared to a standard broadband MVDR solution.