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John J. Benedetto and **Wojciech Czaja***, Department of Mathematics, University of Maryland, College Park, MD 20742, and **Timothy Doster** and **Martin Ehler**. *Fusion of spatial and spectral features in hyperspectral imagery*. Preliminary report.

As new remote sensing modalities emerge, it becomes increasingly important to find novel algorithms for fusion and integration of different data types for the purposes of target/anomaly detection or classification. In this presentation, we provide an overview of several new approaches to the spatial-spectral fusion problem in hyperspectral imagery. This problem emerges when classical spectral analysis is enriched by a detailed study of spatial distribution of features. The approaches we shall describe are rooted in harmonic analysis, and are based on creating novel fused representations of the spatial-spectral data, which are then subject to analysis by means of the state-of-the-art classifiers. Our approaches involve machine learning techniques based on analysis of joint data-dependent graphs and the resulting data-dependent fusion operators and their representations, as well as wavelet packet representations and nonlinear thresholding. (Received September 15, 2013)