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DEMETRIO LABATE* (dlabate@math.uh.edu), 651 Phillip G Hoffman, Department of Mathematics, University of Houston, Houston, TX 77204-3008, and **KANGHUI GUO** (kanghuiguo@missouristate.edu), Department of Mathematics, Missouri State University, Springfield, MO 65804. *Shearlet methods for the analysis of singularities.*

The classical wavelet transform is a remarkably effective tool for the analysis of point-wise regularity of functions and distributions. During the last decade, the emergence of a new generation of multiscale representations - most notably the shearlet representation - has extended the classical wavelet approach leading to a class of generalized wavelet transforms which offer a much more powerful framework for microlocal analysis. In this talk, we show that the shearlet transform provides a precise geometric characterization of the set of singularities of a large class of multidimensional functions and distributions, going far beyond the capabilities of the classical wavelet transform. These properties provide the theoretical underpinning for several state-of-the-art applications from signal processing and sparse data representations. (Received July 28, 2013)