

CLASSIFICATION OF DISCONTINUITIES BY COMPACTLY SUPPORTED SHEARLETS

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ABSTRACT. It has recently been established that the continuous shearlet transform can be used to detect features of images such as edges. Not only does the asymptotic behavior of the shearlet transform determine the position and orientation of singularities, it can also be utilized to classify such edges. In particular, given a characteristic function with a piecewise smooth edge we can detect its singularity curve as well as points where the curve is not smooth. However, these results have only been established for band-limited shearlet transforms. Band-limited shearlets lack the spatial localization that compactly supported shearlets can provide. Therefore the characterization results have to be carried over to case of a shearlet transform with compactly supported shearlets. We will establish that certain compactly supported shearlets can yield the same results as their band-limited counterparts.

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