

1096-65-853

Thomas Strohmer* (strohmer@math.ucdavis.edu), Department of Mathematics, University of California, Davis, Davis, CA 95616. *Eigenvector Localization, Random Matrices, and Banach Algebras*. Preliminary report.

The need to understand when and how well eigenvectors of matrices are localized, arises in a variety of areas as diverse as Massive Data Analysis, Random Matrix Theory, and Condensed Matter Physics (Anderson localization). Yet, our understanding of the localization of eigenvectors is surprisingly limited, given the fact that more and more instances emerge where such localization has been observed empirically, and a thorough understanding of this phenomenon is expected to yield crucial insights. In this talk I will make a first step toward developing a comprehensive qualitative and quantitative mathematical framework for characterizing the localization behavior of eigenvectors. The approach combines tools from Harmonic Analysis, Banach Algebras, and Random Matrix Theory. I will then briefly discuss similar localization results for other matrix factorizations beyond the singular value decomposition, and conclude with some open problems. (Received September 10, 2013)