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Density of state correlations in pseudogap systems MARIANNA MALTSEVA, Rutgers University, PIERS COLEMAN, Rutgers University — Developments in the scanning tunneling microscopy and spectroscopy (STM/STS), make it possible to probe the detailed position and energy- dependent density of states in electronically inhomogenious media [1,2]. Theoretical analysis to date has focused on the spatial autocorrelations of the density of states as a probe of the quasiparticle spectrum. In this work we discuss how correlations between the density of states above and below the Fermi energy can be used to discern the underlying nature of the pseudogap order. We can divide the density of states fluctuations into components that are symmetric and antisymmetric about the Fermi energy. Density waves produce a signal in the antisymmetric channel whereas superconductors produce a signal in the symmetric channel. Moreover, a careful analysis of the momentum dependence can be used to discern between off-diagonal and diagonal disorder [3]. We will present our theory of these topics. [1] H. C. Fu, J. C. Davis, and D.-H. Lee, cond-mat/0403001. [2] J.-X. Zhu, K. McElroy, J. Lee, T. P. Devereaux, Qimiao Si, J.C. Davis, and A.V. Balatsky, cond-mat/0507621. [3] T.S. Nunner, B.M. Andersen, A. Melikyan, and P.J. Hirschfeld, Phys. Rev. Lett. 95, 177003 (2005).

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