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Phase-fluctuations model for the pseudogap of high temperature superconductors WONKEE KIM, YAN CHEN, C. S. TING — Within the phase fluctuation picture for the pseudogap state of a high- T_c superconductor, we incorporate the phase fluctuations generated by the classical XY model with the Bogoliubov-de Gennes formalism utilizing a field-theoretical method. This picture delineates the essential characteristics of spatially varying local order parameters observed in high- T_c superconductors above T_c . We also compute the local density of states near a non-magnetic impurity with a strong scattering potential. The resonance peak smoothly evolves as temperature increases through T_c without showing any sudden broadening, which is consistent with recent experimental findings.

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