Quasiparticles in the vortex state of d-wave superconductors

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The interaction between the d-wave quasiparticles and vortices will be discussed, with the emphasis on symmetry and topology. While the spectral weight is indeed transferred to low energies, as one would expect from semiclassical arguments, in the absence of fine-tuning, the solution to the BogoliubovdeGennes equations will be shown to lead to a gapped spectrum for vortex lattices with inversion center. The dependence of this gap on magnetic field and particle density will be discussed. Finally, the results will be critically compared with experiments on specific heat, NMR and thermal Hall conductivity.