

## **On the coexistence of superconductivity and spin-freezing in underdoped cuprates**

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### **Abstract**

The divergences, on cooling, of NMR-NQR relaxation rates and muon spin rotation in underdoped cuprates, until now interpreted in terms of glassy spin freezing of magnetic moments resulting from charge inhomogeneities, are critically reconsidered. The relaxation data are analyzed in the light of the lack of dependence from an external magnetic field, of the strength of the effective field driving the divergences and of the stretched exponential character of the recovery processes. By resorting also to the theoretical conclusions of the extended t-J model including the intersite Coulomb interactions, it is argued that the divergences of the relaxation rates, rather than arising from magnetic moments could be related to sliding motions of vortex-antivortex orbital currents coexisting with d-wave superconducting state.

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