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Fluctuating charge-ordering in Cuprates

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The stripe quantum critical point theory for high T_c superconductors was shown to imply various pseudogap-formation-temperatures with soft and hard pseudogaps, scaling form for optical conductivity and an anomalous isotope effect. We point out here that there is a direct contribution of charge collective fluctuations to the Raman spectra, which becomes a nice probe of the theory. We find that the critical charge collective modes can or cannot be excited depending on the direction of their wavevector and on the polarization of the incoming and outgoing photons. This provides a direct confirmation that the order associated to the quantum critical point near optimal doping of Cuprates occurs at finite wavevectors.

S. Caprara, C. Di Castro, M. Grilli and D. Suppa
Charge-fluctuation contribution to the Raman response in superconducting Cuprates
Cond/mat 0501671. Phys. Rev. Lett. 95, 117004 (2005)