

SEMPARIS – Séminaires en région parisienne

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Seminaire exceptionnel

Lundi 23 Mai 2022, 11 :00

CPHT, Louis Michel

Domaines : cond-mat.str-el—cond-mat.supr-con—hep-th

Titre : *On the dynamic distinguishability of nodal quasi-particles in over-doped cuprates*

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Résumé : *La_{1.67}Sr_{0.33}CuO₄ is not a superconductor and its resistivity follows a purely T^2 temperature dependence at very low temperatures. La_{1.71}Sr_{0.29}CuO₄, on the other hand, has a superconducting ground state together with a T -Linear term in its resistivity. The concomitant emergence of these two features below a critical doping is mystifying. Here, I begin by noticing that the electron-electron collision rate in the Fermi liquid above the doping threshold is unusually large. Therefore, the scattering time of nodal quasi-particles is close to the threshold for dynamic indistinguishability, which is documented in liquid ^3He at its zero-temperature melting pressure. Failing this requirement of Fermi-Dirac statistics will exclude nodal electrons from the Fermi sea. Becoming classical, they will scatter other carriers within a phase space growing linearly with temperature.*
