# 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 overdoped cuprates*

Orateur : **Kamran Behnia ( ESPCI )**

Résumé : $La_{1.67}Sr_{0.33}CuO_4$ *is not a superconductor and its resistivity follows a purely* $T^2$ *temperature dependence at very low temperatures.* $La_{1.71}Sr_{0.29}CuO_4$, *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 indistinguishibality, 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.*