



Canadian Association
of Physicists

Association canadienne
des physiciens et physiciennes

Contribution ID: 2776

Type: **Invited Speaker** / **Conférencier(ère) invité(e)**

Exploring the pseudogap critical point of cuprate superconductors

Tuesday 4 June 2019 14:15 (30 minutes)

Unexplained to this day, the mysterious pseudogap phase of cuprate high-temperature superconductors is one of their key defining universal properties. Many scenarios have been proposed for its origin, but none has provided a satisfactory description so far. Part of the problem stems from the absence of a clear and sharp signature of the pseudogap at low temperatures in the vicinity of its critical point at p . *Here I will discuss our recent transport and thermodynamic measurements on a range of cuprate materials, which show that p is a quantum critical point.* I will also show that hydrostatic pressure can be used as a tuning parameter for p^* in Nd-LSCO, which puts constraints on theories of the pseudogap. Finally, I will mention very recent thermal Hall effect measurements that reveal a giant effect specific to the pseudogap phase and which seem to arise from neutral excitations.

Author: DOIRON-LEYRAUD, Nicolas (Institut Quantique, Université de Sherbrooke)

Co-authors: BADOUX, S. (Département de Physique & Institut Quantique, Université de Sherbrooke); LALIBERTÉ, F. (Département de Physique & Institut Quantique, Université de Sherbrooke); COLLIGNON, C. (Département de Physique & Institut Quantique, Université de Sherbrooke); GRISSONANCHE, G. (Département de Physique & Institut Quantique, Université de Sherbrooke); LEFRANÇOIS, E. (Département de Physique & Institut Quantique, Université de Sherbrooke); MICHON, B. (Département de Physique & Institut Quantique, Université de Sherbrooke); GORGOUT, A. (Département de Physique & Institut Quantique, Université de Sherbrooke); ATAEI, A. (Département de Physique & Institut Quantique, Université de Sherbrooke); TAILLEFER, L. (Département de Physique & Institut Quantique, Université de Sherbrooke); PROUST, C. (Laboratoire National des Champs Magnétiques Intenses (CNRS, EMFL, INSA, UGA, UPS)); MARCENAT, C. (Univ. Grenoble Alpes, CEA, INAC, PHELIQS, LATEQS); KLEIN, T. (CNRS, Institut Néel)

Presenter: DOIRON-LEYRAUD, Nicolas (Institut Quantique, Université de Sherbrooke)

Session Classification: T3-5 Superconductivity (DCMMP) | Supraconductivité (DPMCM)

Track Classification: Symposia Day - Quantum Materials