

CONDENSED MATTER THEORY SEMINAR

Subject: **Revealing signatures of Mott physics in cuprate superconductors**

Speaker: **Dr. Giovanni Sordi (Royal Holloway University of London, Egham, UK)**

Date & time: **Friday, June 23rd, 2017 at 3:15 p.m.**

Venue: **Seminar room 1.114**

The emergence of superconductivity in a doped interaction-driven insulator is one of the most intriguing phenomena in nature. Cuprates offer a prime example. I present results obtained from plaquette cellular dynamical mean-field theory for the two-dimensional Hubbard model and the Emery model. The normal state which is unstable to the superconducting state shows a first-order transition between a pseudogap and a correlated metallic phase. That transition is the finite-doping extension of the metal-insulator transition obtained in the undoped model. This transition serves as an organizing principle [1] for the normal and superconducting states [1,2]. This mechanism may be a much more general organising principle for strongly-coupled matter [2,3].

- [1] L. Fratino, P. Sémon, G. Sordi, A.-M. S. Tremblay, *Scientific Reports* 6, 22715 (2016)
- [2] L. Fratino, P. Sémon, G. Sordi, A.-M. S. Tremblay, *Phys. Rev. B* 93, 245147 (2016)
- [3] L. Fratino, P. Sémon, M. Charlebois, G. Sordi, A.-M. S. Tremblay, e-print: arXiv:1702.01821 (2017)