

ICTS Seminar

Title : Strongly-correlated electrons driven out of equilibrium by a voltage bias: resistive switchings

Speaker : Camille Aron - Ecole Normale Supérieure, Paris

Date : Tuesday, 7 May, 2019

Time : 1:30 PM

Venue : Feynman Lecture Hall, ICTS Campus, Bangalore

Abstract : A variety of correlated oxides experience a sudden change of resistivity by several orders of magnitude when subject to a strong voltage bias. This nonequilibrium phase transition, so-called resistive switching (RS), shows hysteretic I-V characteristics essential for new electronic memory/switching devices. Before addressing this poorly understood complex phenomenon, I will start with the dissipative dynamics of a simple Hubbard model driven by a constant electric field. In this context, I will introduce new theoretical tools needed to address non-equilibrium steady states of strongly-interacting systems, bypassing the transient dynamics. I will detail the fate of Mott physics in the non-linear regime: dimensional crossover and dielectric breakdown. Afterward, I will propose a phenomenology in ordered correlated insulators.