



Canadian Association  
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Association canadienne  
des physiciens et physiciennes

Contribution ID: 2489

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

## Strongly-coupled superconductivity from quantum cluster approaches

*Wednesday 5 June 2019 13:30 (30 minutes)*

Unconventional superconductors, such as high- $T_c$  cuprates, strontium ruthenate and twisted bilayer graphene, are likely driven towards their state by strong electron-electron repulsion, instead of the classic electron-phonon interaction.

Theoretical modeling of these materials may accordingly be based on the Hubbard model or by its multi-band variations. Few theoretical approaches can deal with the strong interactions involved.

In this talk I will review cluster approaches to strongly correlated superconductivity and competing orders. These include Cluster Dynamical Mean Field Theory and the Variational Cluster Approximation. The discussion will focus on zero-temperature results obtained via an exact-diagonalization solver. Applications to high- $T_c$  cuprates will be described, including related phenomena such as the pseudogap and charge order. Triplet superconductivity on the graphene lattice will also be discussed, as well as applications to twisted bilayer graphene.

**Author:** Prof. SÉNÉCHAL, David (Université de Sherbrooke)

**Presenter:** Prof. SÉNÉCHAL, David (Université de Sherbrooke)

**Session Classification:** W2-7 Condensed Matter Theory I (DCMMP) | Théorie de la matière condensée I (DPMCM)

**Track Classification:** Condensed Matter and Materials Physics / Physique de la matière condensée et matériaux (DCMMP-DPMCM)