



Wednesday, February 13th, 2019 – 15:00 p.m.
CFEL Seminar room IV (Bldg. 99)

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Manipulating quantum materials with cavity fields

We investigate ground state properties of electronic materials strongly coupled to cavity fields. In a two-dimensional electron gas, we explore electron pairing mediated by vacuum fluctuations of the transverse electromagnetic field. To date, these interactions have only been discussed in free space, where their impact is restricted to extremely low temperatures. We argue that the sub-wavelength confinement of the light field in nanoplasmonic cavities can enhance the induced interaction to an experimentally accessible regime. In a one-dimensional Hubbard model, the cavity further enhances magnetic couplings at half-filling, and introduces next-nearest-neighbor hopping.

References:

F. Schlawin, A. Cavalleri, and D. Jaksch, arXiv:1804.07142.

M. Kiffner, J. Coulthard, F. Schlawin, A. Ardavan and D. Jaksch, arXiv: 1806.06752.

Host: Angel Rubio

