Chez Pierre

Presents ...

Thursday, February 22, 2018

10:30am

MIT Room 4-331

Special Chez Pierre Seminar

Marco Polini – [1] Istituto Italiano di Tecnologia, Graphene Labs, Via Morego 30, I-16163 Genova, Italy

"Topological and quantum plasmonics"

When electromagnetic fields are confined through the use of e.g. noble-metal plasmons, losses tend to be high and greatly limit the propagation distance of these collective modes. Substantial efforts have been recently made to increase the lifetime of these modes at room temperature [1,2], without decreasing the associated confining power. A possible pathway is to use plasmons in topologically-non-trivial materials [3-6]. In this talk, I will present a fully quantum-mechanical theory of Weyl semimetal (WSM) Fermi Arc (FA) plasmons [6]. Our theory focuses on the simplest microscopic model Hamiltonian [7] of a type-I WSM with broken time-reversal symmetry and is based on linear response theory [8] and the random phase approximation [8]. I will first highlight how quantum non-local effects are crucial to understand WSM FA plasmon physics and, if time allows, discuss recent progress in understanding quantum non-local effects in graphene plasmonics [9].

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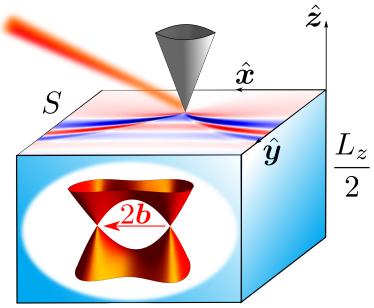

References

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