

Chez Pierre

Presents ...

Monday, February 25, 2019

12:00pm Noon

MIT Room 4-331

Chez Pierre Seminar



Jorge Bravo-Abad – Universidad Autónoma de Madrid

“Active nanophotonics: from nanoscale lasing to QED of photonic Weyl points”

The incorporation of quantum gain and quantum emitters to nanophotonic structures enables a plethora of new fundamental and applied phenomena. In this seminar, I will first discuss our work on the theoretical and numerical modeling of nanoscale lasing action in nanophotonic systems. I will particularly focus on the study of lasing in gain-coated metallic nanoparticles (spasers) and nanowire lasers integrated with plasmonic waveguides.

In the second part of this seminar, I will present our recent results on the QED of quantum emitters coupled to Weyl-point photonic structures. I will show how Weyl points enable the emergence of a novel light-matter bound state, which cannot be described by conventional perturbative treatments. In addition, I will show how photonic Weyl points can lead to a tunable power-law interaction between quantum emitters, with no analogue in any other quantum optical scenario.