“Plasmons and excitons at the atomic-scale”

This talk is about optics at the atomic scale, exploiting plasmons as well as excitons. In particular it will be shown that

a) Optical fields can be confined to atomic scale dimensions using self-assembled plasmonic nanostructures.

b) Optical antennas can be electrically driven by the broadband quantum shot noise of electrons tunneling across its atomic-scale feed gap.

c) The light-matter interaction in monolayer tungsten disulfide (WS2) can be significantly enhanced by coupling the atomically thin semiconductor to a plasmonic nanoantenna.

d) Single-photon emitters in monolayer WSe2 can be created by inducing a strain potential well at the nanoscale gap between two gold nanorods.

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