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Plasmonic Nanoantennas for Wireless Signal Transmission

Optical nanoantennas and nanoantenna arrays are highly innovative approaches for optical signal transmission. Transmitting the signal via a free-space link (power law signal decay) instead of plasmonic waveguides (exponential signal decay) allows realizing low-loss optical communications links without sacrificing deep sub-wavelength field confinement at the transmitting and receiving points. This is a promising route for reconciling the size mismatch between diffraction-limited integrated photonics and integrated electronics. In my talk I will present results from our work on realizing plasmonic nanoantenna devices to control the transmission of light [1,2] and on integrating single quantum emitters into nanoantennas [3,4].

[1] D. Dregely *et al.*, Nat. Commun. **5**, 4354 (2014).

[2] K. Lindfors *et al.*, ACS Photonics **3**, 286 (2016).

[3] M. Pfeiffer *et al.*, Nano Lett. **14**, 197 (2014).

[4] H. Zhang *et al.*, Appl. Phys. Lett. **106**, 101110 (2015).