Abstract: Resonant metasurfaces are devices composed of nanostructured subwavelength scatterers that support narrow optical resonances, enabling applications in filtering, nonlinear optics, and molecular fingerprinting. In this webinar, we will focus on resonant plasmonic metasurfaces based on surface lattice resonances, and our work towards obtaining strong metasurface-based optical nonlinearities. When arranged in a periodic lattice, individual plasmonic nanoparticle resonances combine to form collective oscillations with very high Q-factors. The combination of the strong nonlinearity of the metal with these high Q-factors makes periodic gold nanoparticle arrays into promising candidates for efficient nonlinear interactions over ultra-short propagation lengths.

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