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**Diabolical point and conical diffraction in periodic plasmonic nanostructures** SUNG HYUN NAM, ANTOINETTE TAYLOR, ANATOLY EFIMOV, Los Alamos National Lab, LABORATORY FOR ULTRAFAST MATERIALS AND OPTICAL SCIENCE TEAM — We present formation of a singular (diabolical) point in k-space of a periodic metal-dielectric waveguide array. The singularity originates from the balance in the alternating normal and anomalous coupling. We numerically demonstrate a strong diffraction anomaly (conical-like diffraction) near the singular point. We also show the evolution of the diffraction pattern with band deformation. The peculiar propagation dynamics of surface plasmon polaritons could provide a new toolset for manipulating light on the nano-scale.

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