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Title: Spoof plasmon analogue of metal-insulator-metal waveguides
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Abstract: We describe the properties of guided modes in metallic parallel plate structures with subwavelength corrugation on the surfaces of both conductors, which we refer to as spoof-insulator-spoof (SIS) waveguides, in close analogy to metal-insulator-metal (MIM) waveguides in plasmonics. A dispersion relation for SIS waveguides is derived, and the modes are shown to arise from the coupling of conventional waveguide modes with the localized modes of the grooves in the SIS structure. SIS waveguides have numerous design parameters and can be engineered to guide modes with very low group velocities and adiabatically convert light between conventional photonic modes and plasmonic ones.