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Plasmon reflection by a narrow gap in a 2D conducting plane BOR-YUAN JIANG, Univ of California - San Diego, EUGENE MELE, University of Pennsylvania, MICHAEL FOGLER, Univ of California - San Diego — Graphene and other 2D conductors have recently attracted much interest in the context of controlled plasmon propagation and plasmonic circuits. This motivates us to study a prototypical plasmon reflector: a narrow strip of reduced local conductivity in an otherwise homogeneous conducting plane. The reflection coefficient of the plasmon is a function of two dimensionless parameters, the conductivity contrast and the gap width in units of the plasmon wavelength. Our analytical and numerical calculations show that the reflection coefficient possesses a sequence of high-transmission resonances of Fabry-Perot type as well as a low-transmission "anti-resonance." In particular, the plasmon can be completely reflected by a gap of width much smaller than the plasmon wavelength because of the cancellation between the capacitive and inductive couplings of the two sides of the strip.

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