

Abstract Submitted
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Proposal for realization of one-way electromagnetic modes at the interface of two lossless metals¹ MEHUL DIXIT, DAVID STROUD, Department of Physics, The Ohio State University, Columbus, OH 43210 — One-way electromagnetic waveguides are of special interest because of complete suppression of back-scattering by disorder. Such waveguides support a unique class of photonic modes that completely forbid propagation in the opposite direction. We show that a one-way electromagnetic waveguide can be realized at the interface of two dissimilar lossless metals in an external magnetic field parallel to the interface. Electromagnetic surface plasmon modes bound to the interface of the two metals and propagating parallel to it and normal to the direction of the external magnetic field, with the electric field polarized normal to the plane of the interface, support one-way electromagnetic propagation in a range of frequencies. Increasing the magnetic field increases the window of frequencies for one-way propagation. Adding damping reduces the range of frequencies. Details of the calculation and plots showing the dispersion relation will be presented.

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