

Abstract Submitted
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Nonlocal optical generation of spin and charge currents on the surface of magnetic insulators using total absorption and surface plasmons SIU TAT CHUI, University of Delaware, Z.F. LIN, Fudan University, C.R. ZHANG, National Taiwan University, JOHN XIAO, University of Delaware — We study the nonlocal spin and charge current generation in a finite metallic element on the surface of magnetic insulators such as yttrium iron garnet due to the absorption of the magnetic surface plasmon (MSP). Whereas a surface plasmon is completely reflected by a metal, an MSP can be absorbed due to the absence of backward states. The injection of MSP generates a voltage in the longitudinal direction parallel to the wave vector, with the voltage proportional to input power. If the metal is a ferromagnet, a spin current can also be induced in the longitudinal direction. Our results provide a way to improve upon integrated circuits of spintronics and spin wave logic devices.

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