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Diode-Free Photocurrents in Solid State Dirac Systems NETANEL LINDNER, Technion - Israel Institute of Technology, GIL REFAEL, California Institute of Technology, FELIX VON OPPEN, Free University of Berlin — Producing photocurrents on surfaces of topological insulators has tremendous potential for infrared photo-energy harvesting and detection. Unfortunately, careful analysis of photocurrent generation in topological insulators showed that any effect is minuscule. Here we demonstrate that a significant photocurrent can be generated in a topological insulator surface, and other two dimensional electronic gases with Dirac dispersion, when a spatially periodic magnetic texture is coupled to the surface. We show that this can be achieved by patterning the surface with strips of magnetic material. Applications of devices obtained using the proposed method range from photovoltaic harvesting of infra-red solar energy to low frequency GHZ-THZ photon detectors.

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