

Abstract Submitted
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Quadratic magnetic field dependence of magnetoelectric photocurrent JUNFENG DAI, HAI-ZHOU LU, SHUN-QING SHEN, FU-CHUN ZHANG, XIAODONG CUI, The University of Hong Kong, DEPARTMENT OF PHYSICS, THE UNIVERSITY OF HONG KONG TEAM, CENTRE OF THEORETICAL AND COMPUTATIONAL PHYSICS, THE UNIVERSITY OF HONG KONG TEAM — We experimentally study the spin and electric photocurrents excited by a linearly polarized light via direct interband transitions in an InGaAs/InAlAs quantum well. In the absence of a magnetic field, the linearly polarized light induces a pure spin current due to the spin-orbit coupling, which may be transformed into a measurable electric current by applying an in-plane magnetic field. The induced electric photocurrent is linear with the in-plane magnetic field. Here, we report a quadratic magnetic field dependence of the photocurrent in the presence of an additional perpendicular component of the magnetic field. We attribute the observation to the Hall effect of magnetoelectric photocurrent.

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