Title:	Unique Signatures of Rashba Effect in Angle Resolved Magnetoresistance
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Abstract:	An unusual dependence of electrical resistance on the direction of the magnetic field, relative to that of current, in a 2D electron gas with strong spin-orbit coupling formed at the LaVO3–KTaO3 interface is reported. The observations are incompatible with any previously reported magneto-transport measurements. Surprisingly, on the one hand the system exhibits signatures of chiral anomaly such as negative magnetoresistance and planar Hall effect, on the other hand, a number of features are even qualitatively beyond the existing theories. It is found that all the unusual features in transport are controlled by the quantum effects originating from strong spin-orbit coupling induced spin-momentum locking, and the traditional Lorentz mechanism plays a minimal role. The results not only open up a new avenue related to magneto-transport in spin-orbit coupled metals but also pave a path to engineer non-magnetic materials as sensors for vector magnetic fields.
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