

Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Ballistic Spin Resonance SERGEY FROLOV, SILVIA LUESCHER, WING-WA YU, YUAN REN, JOSHUA FOLK, UBC, WERNER WEGSCHEIDER, University of Regensburg — We demonstrate spin resonance driven by ballistic motion of electrons and mediated by spin-orbit interaction in a micron-scale channel of GaAs/AlGaAs two-dimensional electron gas. The resonance is observed when the frequency of electron bouncing trajectories in the channel matches the spin precession frequency set by a large in-plane magnetic field. The resonance is manifested as a suppression of pure spin currents that are generated in the channel by injection through quantum point contacts. The resonant frequency (10-50 GHz) can be tuned by varying electron density or channel width, as well as by bending the electron trajectories with a small out-of-plane magnetic field.

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Date submitted: 20 Nov 2008

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