## Abstract Submitted for the MAR10 Meeting of The American Physical Society

Controlling the spin-orbit amplitude in a non-flat quantum well<sup>1</sup> OLEG SHALAEV, GIOVANNI VIGNALE, University of Missouri-Columbia — Using the inverse-scattering theory, we adjust the wave functions in a quantum well so that electrons occupying the lowest subband conserve their spin projection, while electrons occupying the higher subband experience Rashba spin-orbit interaction. Shifting the Fermi level in the well with an external gate, one can drastically change the strength of the spin-orbit interaction felt by electrons. Such system can work as a spin-orbit trigger which has two states: (i) when the spin projection  $s_z$  is a constant and (ii) when the spin precesses due to the spin-orbit interaction.

<sup>1</sup>Work supported by ARO Grant No. W911NF-08-1-0317

Oleg Shalaev University of Missouri-Columbia

Date submitted: 19 Nov 2009 Electronic form version 1.4