Abstract Submitted
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Billiard simulation and FFT analysis of AAS oscillations in nanofabricated InGaAs[1] TAKAAKI KOGA, SEBASTIEN FANIEL, SHUNSUKE MINESHIGE, TORU MATSUURA, Hokkaido University, YOSHIAKI SEKINE, NTT BRL, NTT Corp. — Gate-voltage-dependent amplitude of magneto-conductance oscillation was analyzed using FFT method. The obtained FFT spectrum was compared with the areal dependence of the occurrence and spin interferece amplitude, calculated for Altshuler-Aronov-Spivak (AAS) type time-reversal pairs of the interference paths on all possible classical trajectroies that were obtained by extensive billiard simulations within the given structures. We have calcuated generic spin interference (SI) curves as a function of the Rashba parameter α, for various values of the Dresselhaus parameter b_{41}^{6c6c} [eVÅ^3]. The comparison between theory and experiment suggested that the value of b_{41}^{6c6c} should be considerably reduced from 27 eVÅ^3, the generally known value from the $\mathbf{k} \cdot \mathbf{p}$ theory.

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Takaaki Koga
Hokkaido University

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