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Spin Tunneling through an Indirect-Gap semiconductor Barrier SUBODHA MISHRA, SUNITA THULASI, SASHI SATPATHY, Department of Physics, University of Missouri-Columbia, Columbia, MO-65211 — We study the spin dependent tunneling of electrons through an indirect conduction minimum of a zinc-blende semiconductor and show that both the transmission coefficient as well as the spin polarization can be substantially large at the same time, unlike the case for tunneling through a direct minimum.¹ The spin polarization is calculated using a simple barrier tunneling model. The parameter describing the linear k spin splitting for the indirect minimum is computed using density- functional method. The basic difference is the linear k spin splitting for the indirect minimum, as opposed to the Dresselhaus k^3 splitting for the direct minimum at the γ point.

¹V. I. Perel, S. A. Tarasenko, and I. N. Yassievich. Phys. Rev. B **67**, 201304 (2003).

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