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Nonmagnetic spin current generation as nonequilibrium Kondo effect in a spin-orbit nano interferometer[1] NOBUHIKO TANIGUCHI, University of Tsukuba — We investigate electric generation of spin-dependent transport through a single-level quantum dot embedded in a ring by help of the Rashba spin-orbit coupling[2]. Although it is known for some time that applying finite bias to this type of the spin-orbit interferometer induces finite spin polarization on the dot[3], the mechanism of driving such spin polarization to flow has not fully been understood. For instance, in spite of finite spin polarization on a noninteracting single-level dot, no spin current is found to appear. We show theoretically that it is possible to generate electrically large spin-dependent current through an interacting single-level dot, as a combined effect of the Kondo effect and finite bias as well as the Rashba spin-orbit interaction. In contrast to earlier work[4], we argue the emergent spin-dependent transport in the present model is viewed as a new type of nonequilibrium Kondo effect; it appears in the middle of the Kondo valley and is suppressed by bias voltage larger than the Kondo energy properly renormalized by the Rashba spin-orbit coupling.

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[3]M. Crisan et al. Phys. Rev. B **79** 125319 (2009).
[4]H.-F. Lü and Y. Guo, Phys. Rev. B **76**, 045120 (2007).

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None

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