

Abstract Submitted  
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**Spin splitter in a quantum ring with Rashba coupling**<sup>1</sup> B. TANATAR, Bilkent University, Department of Physics, 06800, Ankara, Turkey, V. MOLDOVEANU, National Institute of Materials Physics, P.O. Box MG-7, Bucharest-Magurele, Romania — We use non-equilibrium Greens' function formalism to calculate the spin currents in a one-dimensional ring coupled to three leads in the presence of perpendicular magnetic flux  $F$  and Rashba spin-orbit coupling. A finite bias is applied between the input lead and the other two output leads. We demonstrate that the spin-orbit coupling allows one to operate this system as a spin splitter, i.e. the output leads deliver spin-polarized currents with different orientations. We find that the spin splitter operation can be tuned at integer multiples of  $F/F_0$ . Efficiency depends not only on the value of the Rashba coupling but also on the bias applied between the input and output leads. The selected spin orientation of the output leads can be reversed by a slight change of their contact position. We also discuss the connection between the spin splitter operation and the spectral properties of the ring.

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B. Tanatar  
Bilkent University, Department of Physics, 06800 Ankara, Turkey

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