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Optically induced spin polarization of an electric current through a quantum dot ANATOLY SMIRNOV, D-Wave Systems, Vancouver, Canada, LEV MOUROKH, Stevens Institute of Technology — We examine electron transport through semiconductor quantum dot subject to a continuous circularly polarized optical irradiation resonant to the electron - heavy hole transition. Electrons having certain spin polarization experience Rabi oscillation and their energy levels are shifted by the Rabi frequency. Correspondingly, the equilibrium chemical potential of the leads and the lead-to-lead bias voltage can be adjusted so only electrons with spin-up polarization or only electrons with spin- down polarization contribute to the current. The temperature dependence of the spin polarization of the current is also discussed.

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