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Interaction effects in transport through an electronic Mach-Zehnder interferometer VITALY GOLOVACH, FLORIAN MARQUARDT, Department of Physics, Arnold-Sommerfeld-Center for Theoretical Physics, and Center for NanoScience, Ludwig-Maximilians-University Munich, Germany — We study theoretically transport through an electronic Mach-Zehnder interferometer in the presence of Coulomb interaction inside the interferometer, using a discrete wave-packet model. We find that the mutual capacitance between the arms of the interferometer leads to a suppression of the visibility of the Aharonov-Bohm oscillations at a large source-drain bias $\Delta\mu \gg \hbar v_F/L$, where L is the length of the arms and v_F is the electron drift speed. Our numerical simulations indicate that the visibility of the Aharonov-Bohm oscillations is a non-analytic function of the mutual capacitance strength, in the limit $\Delta\mu \rightarrow \infty$.

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