

Abstract Submitted  
for the MAR08 Meeting of  
The American Physical Society

Sorting Category: 02.6 (T)

**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  $\Delta\mu \rightarrow \infty$ .

Vitaly Golovach

Vitaly.Golovach@physik.lmu.de

Prefer Oral Session      Department of Physics, Arnold-Sommerfeld-Center for Theoretical Physics  
 Prefer Poster Session      and Center for NanoScience, Ludwig-Maximilians-University Munich, Germany

Date submitted: 29 Nov 2007

Electronic form version 1.4