

Abstract Submitted  
for the MAR07 Meeting of  
The American Physical Society

**Resonant dephasing  
of the electronic Mach-Zehnder interferometer<sup>1</sup>** EUGENE SUKHORUKOV,  
University of Geneva, VADIM CHEIANOV, Lancaster University — We address  
the recently observed unexpected behavior of Aharonov-Bohm oscillations in the  
electronic Mach-Zehnder interferometer experimentally realized in a quantum Hall  
system [1]. We argue that the measured lobe-like structure in the visibility of oscil-  
lations and the phase rigidity result from a long-range *local* interaction between two  
adjacent counter-propagating edge states, which leads to a resonant scattering of  
bosonic charge excitations. The visibility and phase shift, expressed in terms of the  
transmission coefficient for bosons, provide the tool for investigating the nature of  
quantum Hall edge states. [1] I. Neder *et al.*, Phys. Rev. Lett. **96**, 016804 (2006).

<sup>1</sup>The work is supported by the Swiss NSF

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Date submitted: 19 Sep 2006

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