

Abstract Submitted
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Resonant **dephasing**
of the electronic Mach-Zehnder interferometer¹ 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).

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