Abstract Submitted
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Ballistic interference in ultraclean suspended monolayer graphene[1] CHRISTIAN SCHONENBERGER, PETER RICKHAUS, ROMAIN MAURAND, PETER MAKK, SAMUEL HESS, Department of Physics, University of Basel, Switzerland, ENDRE TOVARI, Department of Physics, Budapest University of Technology and Economics, Hungary, MARKUS WEISS, Department of Physics, University of Basel, Switzerland, MING-HAO LIU, KLAUS RICHTER, Insitute of Physics, University of Regensburg, Germany — We have developed a versatile technology that allows to suspend graphene and complement it with arbitrary bottom and top-gate structures. Using current annealing we demonstrate exceptional high mobililties in monolayer graphene approaching 100 m^2/Vs. These suspended devices are ballistic over micrometer length scales and display intriguing interference patterns in the electrical con-ductance when different gate potentials are applied. Specifically we will discuss different types of Fabry-Perot resonances that appear in different gate voltage regimes of ballistic pn devices [1]. We will go beyond our recent publication [1] and also show electric transport measurements in magnetic field, where intriguing features appear in the intermediate field range in between the low-field Klein-tunneling regime and the quantum Hall regime. We observe a large number of non-dispersing states which might be due to so-called snake states confined to the pn interface. We will also discuss first results on electron guiding in ultraclean monolayer graphene.

[1] P. Rickhaus et al., Nature Communications 4, 2342 (2013)

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Christian Schonenberger
Department of Physics, University of Basel, Switzerland

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