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**Single-electron quantum tomography in quantum Hall edge channels**<sup>1</sup> PASCAL DEGIOVANNI, CNRS / ENS Lyon, CHARLES GRENIER, CPHT - Ecole Polytechnique Paris, RÉMY HERVÉ, INSA Lyon, ERWANN BOCQUILLON, Laboratoire Pierre Aigrain ENS Paris, FRANÇOIS D PARMENIER, CNRS - Laboratoire de Photonique et Nanostructures, JEAN-MARC BERROIR, GWENDAL FÈVE, BERNARD PLAÇAIS, Laboratoire Pierre Aigrain ENS Paris — The recent demonstration of an on demand single electron source [1,2] has opened the way to a new generation of “electron quantum optics” experiments aimed at preparing, manipulating and measuring coherent single electron excitations propagating in ballistic conductors such as the edge channels of a 2DEG in the integer quantum Hall regime. In this talk, I will describe a proposal [3] for measuring single electron coherence using an Hanbury Brown and Twiss interferometer. This quantum tomography protocol could be used to characterize single electron sources and to perform quantitative studies of decoherence.

[1] Science 316, 1169 (2007)

[2] Phys. Rev. B 82, 201309 (2010)

[3] New Journal of Physics 13, 093007 (2011)

<sup>1</sup>ANR GRant 1shot (ANR-2010-BLANC-0412)

Prefer Oral Session  
 Prefer Poster Session

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