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Recent experimental achievements [1] have opened a way towards the realization of quantum optics experiments with electrons propagating in ballistic conductors such as the edge channels of a 2DEG in the integer quantum Hall regime. In this presentation, we show how the coherence properties of single electron excitations can be described through a formalism analogous to Glauber's theory for the coherence of the electromagnetic field. In particular, we will show how this formalism shed new light on the decoherence and relaxation of electrons due to interactions. To illustrate this last point, we will analyze both stationary [2, 4] and nonstationary properties of electronic transport. All over the presentation, the relation between coherence properties and experimentally relevant quantities will be made explicitly [3].

### Références

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- [3] Ch. Grenier, R. Hervé, E. Bocquillon, F.D. Parmentier, J.-M. Berroir, B. Plaçais, G. Fève & P. Degiovanni arxiv:10102166
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