

Abstract Submitted  
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**A ballistic gate-tunable contact junction in graphene** QUENTIN WILMART, MICHAEL ROSTICHER, MOHAMED BOUKHICHA, ANDREAS INHOFER, PASCAL MORFIN, GWENDAL FEVE, JEAN-MARC BERROIR, BERNARD PLACAIS, Laboratoire Pierre Aigrain, Ecole Normale Supérieure-PSL Research University, CNRS, EQUIPE DE PHYSIQUE MÉSCOSCOPIQUE TEAM — Field-effect control of carrier is very efficient in graphene and allows controlling the doping profile with a great accuracy and high spatial resolution. This is needed if one wants to implement Dirac fermion optics experiments or simply to improve the performance of graphene devices. In this work we realize graphene transistors equipped with a set of local back-gates that provide control of local electric fields in the  $10^8 V/m$  range at the 10 nanometer scale. In particular we demonstrate ballistic contact junctions using transistors with independent channel and contact back-gates. We shall discuss the possibilities offered by this technology for ballistic electronic and opto-electronic applications.

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