Abstract Submitted
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Optimization of Graphene Field-Effect Transistors for RF Applications HSIN-YING CHIU, YU-MING LIN, KEITH A. JENKINS, DAMON B. FARMER, ALBERTO VALDES-GARCIA, PHAEDON AVOURIS, IBM T. J. Watson Research Center — Graphene has been demonstrated as a promising material for high frequency field-effect transistors (FETs). Here we present dc and high-frequency characterization of dual-gated graphene FETs where the performance is improved by reducing the access resistance using electrostatic doping via back gate. With a carrier mobility of 2500 cm^2/Vs, we demonstrate a cut-off frequency of 50 GHz in a 350-nm gate length device, which exceeds that of Si MOSFETs with the same gate length, illustrating graphene's potential for RF applications. Related issues in optimization of graphene FETs will also be discussed, including device geometry, parasitic impedance, metal contact, gate length dependence and dielectrics selections. Ref. Y.-M. Lin *et al*, *IEEE Electron Device Letters* (in press)

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