

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Current Saturation and Surface Polar Phonon Scattering in Graphene VASILI PEREBEINOS, PHAEDON AVOURIS, IBM - Watson — The electrostatic modulation of the graphene channel through gates yields very promising two-dimensional field-effect devices for analog and radio-frequency applications. Such devices should ideally be operated in the saturation limit. Our calculations suggest that in the diffusive regime surface polar scattering is the likely mechanism for the current saturation and that the observed full current saturation can only be accounted by the self-heating effect [1]. The currents can be enhanced if efficient device cooling is applied by appropriate choice of substrate and optimization of the graphene/substrate contact thermal resistance.

[1] V. Perebeinos and Ph. Avouris, “Current Saturation and Surface Polar Phonon Scattering in Graphene” arXiv:0910.4665.

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Date submitted: 17 Dec 2009

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