

Abstract Submitted
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Johnson Noise Thermometry in Graphene under Magnetic Fields.¹ JESSE CROSSNO, GIL-HO LEE, Harvard University, HUGO BARTOLOMEI, cole Normale Suprieure, KIN CHUNG FONG, Raytheon BBN Technologies, PHILIP KIM, Harvard University — We measure Johnson noise in graphene under a magnetic field in response to Joule heating. The measurement was performed at high frequency utilizing a noise matching circuit with a large dynamic range of source impedance required for high magnetic field. The graphene channel is self heated via current induced joule heating. The temperature and bias voltage are kept low so that the heat carried by the phonon system is negligible and direct electronic cooling is measured. In the high magnetic field regime, we observed hot spot formation in the quantum edge states where most of the heat dissipation occurs. We will also discuss the measured thermal conductance in the low magnetic field regime in relation to magneto hydrodynamics.

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