

Abstract Submitted
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In-Situ Thermal Mapping of Graphene via TEM Measurement of the Debye-Waller Factor¹ WILLIAM A. HUBBARD, MATTHEW MECKLENBURG, B.C. REGAN, UCLA Department of Physics and Astronomy — Thermal motion of the constituent atoms attenuates high-order peaks in a crystal's electron diffraction pattern. Using TEM we measure this attenuation, parameterized by a Debye-Waller factor, in single-layer cleaved graphene that is Joule-heated *in situ*. We find that the Debye-Waller factor, as probed with selected area electron diffraction, provides a reliable measure of the local temperature and thus allows for quantitative thermal mapping on the nanoscale.

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William A. Hubbard
UCLA Department of Physics and Astronomy

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