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**Nonlinear Terahertz Spectroscopy of Single-Layer Graphene** ZACHARY THOMPSON, MICHAEL PAUL, ANDREW STICKEL, JENNA WARDINI, ETHAN MINOT, YUN-SHIK LEE, Department of Physics, Oregon State University — Graphene has unique electronic properties which lead to remarkably strong optical nonlinearities in the terahertz (THz) and infrared (IR) regime, thus making it an attractive material for active photonic devices. Using THz free-space transmission spectroscopy, we demonstrate large THz transmission enhancement (>15%) in single-layer CVD graphene at high THz intensities. The nonlinear effects, caused by charge acceleration and carrier-carrier scattering, exhibit non-Drude behavior in the THz conductivity, where THz fields induce extreme non-equilibrium electron distributions.

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