

Abstract Submitted  
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**Photon interactions with graphene electrons: consequences for the optical conductivity** MATTHEW MECKLENBURG, UCLA Department of Physics and Astronomy, and CNSI, JASON WOO, UCLA Electrical Engineering Department, and CNSI, B. C. REGAN, UCLA Department of Physics and Astronomy, and CNSI — We calculate the lowest-order amplitude for interaction between 3D photons and 2D graphene electrons. Using Fermi's Golden Rule, we find the thermal corrections to the graphene's zero-temperature opacity of  $\pi\alpha$ . Equating the power absorbed to the Joule heating rate gives an expression for the optical conductivity. We find an optical conductivity that agrees with previous results in the limit of zero temperature, but gives a finite value at zero frequency and finite temperature.

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