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**Optical Properties of Graphene Plasmons in Periodic Gate Structures** STEFAN C. BADESCU, ROBERT C. FITCH, Air Force Research Laboratory, WPAFB, Dayton OH — Plasmons in graphene have been shown to be tunable in a wide frequency range including the THz regime. Room temperature, narrow plasmon modes have been demonstrated in graphene ribbons arranged periodically on surfaces. Here we present computational results of localized modes in continuous graphene layers with periodic arrangements of gates that modulate spatially the charge density. These induce boundary conditions different from those in graphene ribbons and open the possibility of electrical injection. We discuss the optical absorption and reflection spectra for different gate voltages and for a range of gate widths and spacing. We also discuss different regimes of electrical injection and the role of substrates in coupling to plasmons and in heat dissipation.

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