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**Strong exciton-plasmon coupling in graphene-semiconductor structures** TIGRAN V. SHAHBAZYAN, Jackson State Univ, KIRILL A. VELIZHANIN, Los Alamos National Lab — We study strong coupling between plasmons in monolayer doped graphene and excitons in narrow gap semiconductor quantum well separated from graphene by a potential barrier. We show that Coulomb interactions between excitons and plasmons result in mixed states described by Hamiltonian similar to one describing exciton-polaritons and derive the exciton-plasmon coupling parameter that depends on system geometry and material properties. We calculate numerically the Rabi splitting of exciton-plasmariton dispersion branches for several semiconductor materials and find that it can reach 100 meV for small graphene and quantum well separations.

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