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Strong coupling polarons in graphene LUCIAN COVACI, MONA BERCIU, University of British Columbia — Continued interest in electronic properties of graphene has prompted for the description of polaron formation in 2D honeycomb lattices. We employ the recently developed Momentum Average (MA) approximation to describe coupling to optical phonons in graphene. The extension of the original method to unit cells that have multiple sites makes possible a fast calculation of the electron self-energy in graphene. This method has been proved very successful with Holstein polarons in square lattices and thus allows us to obtain accurate non-perturbative results for the ground state energy, the effective mass and the spectral function in any electron-phonon coupling regimes. Both types of electron-phonon scattering (inter and intra band) can be easily solved within the MA approximation.

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