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**Electronic Properties of Graphene Multilayers**[1] HAMED SADEGHI, Department of Physics & Astronomy, California State University Long Beach, Long Beach 90840, JULIUS DE ROJAS, Department of Physics, University of California at Davis, Davis 95616, ANDREAS BILL, Department of Physics & Astronomy, California State University Long Beach, Long Beach 90840 — We determine numerically the tight-binding band structure, the density of states and the plasmon spectrum of N stacked graphene layers beyond the Dirac cone approximation. We calculate the polarizability in the random phase approximation and determine the dielectric function $\epsilon(\mathbf{q},\omega)$. This allows to determine the acoustic and optical modes of the plasmon spectrum. Because we do not limit ourselves to the Dirac cone approximation we cannot use the semi-analytic approach usually proposed for graphene in the literature. Instead we use a combination of numerical procedures to determine the collective modes of graphene multilayer.

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