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Theory of resonant multiphonon Raman scattering in graphene monolayers DENIS BASKO, IGOR ALEINER, Columbia University, Physics Department — The Raman spectrum of graphene consists of distinct narrow peaks corresponding to different optical phonon branches as well as their overtones [1]. We show how the relative intensities of the overtone peaks encode information about relative strengths of different inelastic scattering processes electrons are subject to. In particular, assuming that the most important processes are electron-phonon and electron-electron scattering, it is shown that one can deduce their relative interaction strengths from the Raman spectra. [1] A. C. Ferrari et al., Phys. Rev. Lett. 97, 187401 (2006); A. Gupta et al., cond-mat/0606593; D. Graf et al., cond-mat/0607562.

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