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Electron-phonon and phonon-phonon interactions in low dimensional carbon materials. IOANNIS CHATZAKIS, SACHIN SHARMA, EDWARD SANCHEZ, Texas Tech University — Low-dimensional (e.g. atomically thin) materials continue to gain prominence in applications ranging from electronics to photonics and alternative energy generation systems. Critical to efficiently developing these systems is the understanding of the fundamental processes related to the dynamics of charge carriers, phonons, and other excitations (i.e. excitons, polaritons). In this talk, I will focus on electron-phonon interactions in low dimensional carbon materials. Through these interactions the electrons lose all their excess energy above the band edge and become thermally equilibrated with the most strongly coupled optical phonon modes. Subsequently the optical phonons modes through unharmonic phonon-phonon scattering processes decay to lower-energy phonon modes.

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