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Excitons and phonons in low dimensional heterostructures

In this poster I will present some recent advances in exciton-phonon coupling in low-dimensional systems. I will describe the role of dimensionality in the formation of excitons and their interaction with vibrational modes. I will show how this interaction leads to a finite lifetime for excitons and the appearance of phonon-assisted replicas in the luminescence spectra. Results will be presented for hexagonal boron nitride and molybdenum disulfide.

Reference:
1) Temperature Dependence of the Optical Response in MoS2
F. Paleari, C. Attaccalite, D. Sangalli, et al., in preparation (2023)

2)First-principles study of luminescence in hexagonal boron nitride single layer: Exciton-phonon coupling and the role of substrate,
Pierre Lechifflart, Fulvio Paleari, Davide Sangalli, and Claudio Attaccalite, Phys. Rev. Mat. 7, 024006 (2023)

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Classification de thématique: MC19 Hétérostructures et interfaces de basse dimensionnalité