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Optical and Electromechanical Properties of Graphene and Carbon Nanotubes via a Two-Field Elastic Description. CRISTIANO NISOLI, VINCENT CRESPI, Penn State University — A two-fields continuum model for graphene and carbon nanotubes describes a wealth of phenomena inaccessible to the naïve continuum approach, such as optical bands in graphite and nanotubes, the hexagonal Brillouin zone in graphene, phonons spectra beyond the long-wavelength regimen and Raman active optical modes; by taking into account all the degrees of freedom of the honeycomb lattice, it is best suited for dealing with electromechanical effects, such as doping induced deformations, or strain induced band gap opening.

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