



Jahn-Teller and Coulomb correlations in fullerene ions and compounds

By Manini, Nicola / Tosatti, Erio

Condition: New. Publisher/Verlag: LAP Lambert Academic Publishing | From isolated ions to metal, insulator, and superconductor phases of alkali fulleride solids | We offer a partial review of some theoretical aspects of the interplay among strong electron-electron Coulomb plus exchange correlations and Jahn-Teller vibronic phenomena in fullerene ions and in solid conductors, superconductors, insulators. The first half of this work covers molecular fullerene ions, their intramolecular Jahn-Teller effect, Coulomb exchange (Hund's rule) interactions, and molecular vibronic spectroscopies. Several aspects, calculations, and phenomena are discussed also in connection with spectroscopic data. The second part addresses intermolecular electron motion in molecular solid fullerides, with special emphasis given to trivalent cases such as K_3C_{60} and $NH_3 K_3C_{60}$, where metallic, superconducting and Mott insulating phases are at play. Dynamical mean field theory approaches to simplified Hamiltonians for this system are discussed in the light of some of the observed phenomenology. In particular $NH_3 K_3C_{60}$ and the more recently studied cubic Cs_3C_{60} compounds are discussed as realizations of Mott-Jahn-Teller insulators, which, under pressure, turn into strongly correlated superconductors, sharing besides a "dome-shaped" nonmonotonic dependence | Format: Paperback | Language/Sprache: english | 131 gr | 88 pp.



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