Quantum N-body problem in condensed matter physics

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Résumé

In this talk I will give a pedagogical introduction to the quantum mechanical description of extended systems. I will first introduce the concept of band structure and its link to the electronic structure of finite systems. I will then move to the most commonly used ab-initio theories to describe some interesting properties (e.g. photoemission and optical spectra) of these systems. I will focus in particular on density-functional theory [1] (and its extension to time) and on many-body perturbation theory based on Green's functions [2].

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Mots-Clés: Green's functions, extended systems, density functional theory

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