

Abstract Submitted
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Physics with attosecond x-ray pulses ANTONIO PICON, Univ Autonoma de Madrid — Resolving the real-time motion of carriers amongst valence and conduction band states provides the foundation for the development of materials with novel functionality and the advancement of modern electronics. Future studies using ultrafast capabilities with few-/sub-femtosecond x-ray transient absorption are essential to understand the optical response of materials in the early steps and unveil the role of electron-electron and electron-phonon scattering. Time-dependent approaches to describe these future experiments present challenging difficulties at the x-ray regime. In the recent years, we have developed in our group a novel theory based on the well-known Bloch equations that account for core electrons, allowing the description of x-ray spectroscopy experiments at the attosecond regime. Here we show recent theoretical results for semi metals systems. We revise some of these results and comment on future perspectives for studying the most fundamental electron-electron and electron-phonon interactions using attosecond x-ray spectroscopy.

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