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【512】 The Balance Between Independent and Correlated Electron Dynamics in Transition Metals

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Attosecond transient absorption spectroscopy studies are presented to provide a systematic overview of the electronic and phononic response of optically excited thin-film transition metals on timescales ranging from a few femtoseconds to hundreds of picoseconds. Special emphasis is placed on understanding the balance between independent-electron population dynamics and correlated electron dynamics. It is found that collective effects dominate the response in first-row transition metals through a modification of local screening dynamics. However, due to the more delocalised nature of the valence orbitals of third-row transition metals, independent-electron phenomena such as Pauli state-blocking become most prominent in this class of materials.

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