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【606】 Non-linear optical processes and collective excitations in spin orbit coupled systems

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Systems with spin orbit coupling (SOC) driven out of equilibrium give rise to interesting electron dynamics due to their coupling between the electron spin and momentum. Recent efforts have been made in order to understand the imprints of SOC on the high harmonic generation spectra of solids. In a parallel development, the field of non-equilibrium superconductivity in unconventional superconductors has lately attracted a lot of attention due to the prospect of Higgs-spectroscopy. We extend these studies by looking at the interplay of the spin related observables and collective excitations. Emphasis will be put on their non-linear signatures and thus relating the results to the already established normal state non-equilibrium dynamics.

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