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【609】Ultrafast dynamics of the magnetic fluctuations in the spin-chain CuGeO3

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In the spin-chain compound CuGeO3, the relation between charge, spin, and lattice degrees of freedom, giving rise to the Spin-Peierls transition, is still unclear. In this system, Resonant Inelastic X-ray Scattering (RIXS) at the O K-edge is capable of detecting charge-transfer excitations, including the formation of a Zhang-Rice singlet. The probability for such a non-local process depends on the magnetic correlations between two neighboring CuO4 plaquettes. We use an ultrashort laser pump to excite carriers across the charge transfer gap, perturbing the local spin correlations by removing magnetic holes from the Cu site. With ultrafast O K-edge RIXS, we probe the suppression and recovery of the Zhang-Rice singlet, giving insight into the dynamics of the short-range magnetic correlations.

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