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Quasi-zero dimensional CuB_2O_4 as an archetype for resonant inelastic X-ray scattering JASON HANCOCK, GUILLAUME CHABOT-COUTURE, YUAN LI, Stanford, GUERMAN PETRAKOVSKII, Kirenski Institute, Siberia, KENJI ISHII, IGNACE JARRIGE, JUN-ICHIRO MIZUKI, JAEA, SPring8, MARTIN GREVEN, TOM DEVEREAUX, Stanford — We explore the general phenomenology of resonant inelastic scattering (RIXS) using CuB_2O_4, a network of CuO_4 plaquettes electronically isolated by B^{+3} ions. Spectra show a small number of well-separated features, and we exploit the simple electronic structure to explore RIXS phenomenology by developing a calculation allowing for intermediate-state effects ignored in standard approaches. These effects are found to be non-negligible and good correspondence between our model and experiment leads to a simple picture of such phenomenology as the genesis of d$\rightarrow$d excitations at the K edge and intermediate-state interference effects.

Jason Hancock
Stanford

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