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Theory of K-edge Resonant Inelastic X-ray Scattering for Perovskite Manganites¹ TSEZAR F. SEMAN, New Jersey Institute of Technology, XUERONG LIU², JOHN P. HILL³, Brookhaven National Laboratory, MICHEL VAN VEENENDAAL, Argonne National Laboratory and Nothern Illinois University, KEUN HYUK AHN, New Jersey Institute of Technology — We present calculations of K-edge resonant inelastic x-ray scattering (RIXS) spectrum for layered and three dimensional perovskite manganites with charge, orbital, and spin orderings. We extend the approach in Ref. [1] to the tight binding model for the manganites, calculate RIXS intensity in momentum and energy space, and compare with experiment data. The results show strong dependence of the RIXS intensity on momentum, which agrees well with experimental observation. We discuss its implications on the material properties and the RIXS process.

 K. H. Ahn, A. J. Fedro, and M. van Veenendaal, Phys. Rev. B 79, 045103 (2009).

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