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Experimental and theoretical determination of the anisotropic anomalous scattering tensor at the Mn K edge in LaMnO₃ JOAQUIN GARCIA, GLORIA SUBIAS, M.C. SANCHEZ, ICMA, CSIC-Universidad de Zaragoza, Spain, J. HERRERO-MARTIN, CMA,CSIC-Universidadza, Spain de Zarago, KEISUKE HATADA, C.R. NATOLI, S. DI MATTEO, LNF, INFN, Frascati Italy, C. MAZZOLI, ESRF, Grenoble, France, J. BLASCO, ICMA, CSIC-Universidad de Zaragoza, Spain — A resonant x-ray scattering (RXS) study of (h 0 0), (0 k 0) and (0 0 l) forbidden reflections (h, k, l odd) at the Mn K- edge of LaMnO₃ was performed between 10 and 300 K. We observed strong resonant peaks at the three reflections. The azimuth angle dependence of all these reflections showed a characteristic sine evolution of π -period. The energy dependence of the intensity for (h 0 0) and (0 k 0) reflections was identical while different structures were observed for (0 0 l) reflections. We did not observe any change either on the resonance intensity or on the line shape when crossing the Néel temperature $T_N \sim 140$ K. The energy, azimuth angle and polarization dependences of the three reflections are originated by off-diagonal terms of the scattering tensor. The theoretical analysis show that the principal axes of the anomalous scattering tensor depends on the photon energy. Moreover, resonant scattering in LaMnO₃ is not a probe of d-orbital ordering.

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