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A. R. Wildes *et al* 2004 *Europhys. Lett.* **68** 582 doi:10.1209/epl/i2004-10230-6**The magnetic structure of Fe₇₈Si₉B₁₃ commercial metallic glasses**A. R. Wildes¹, N. Cowlam², Q. A. Pankhurst³, S. Al-Heniti⁴ and M. R. J. Gibbs²

Show affiliations

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X-ray and polarized neutron scattering techniques have been used to examine the magnetic structure of wide-ribbon Fe₇₈Si₉B₁₃ commercial metallic glass (METGLAS® 2605-S2). Samples with well-defined geometry have been made for the experiments at 300 K and in 1.1 T and have been measured in the As-received, Field Annealed and Stress Relieved states. The data show that all three samples are spatially correlated non-collinear ferromagnets. A new method of analysis has been applied to show that the non-collinear components of the moments are correlated over several neighbour spacings, $\approx 50\%$ of the range of the atomic correlations, and that, while annealing treatments do not have a profound effect on the correlations, the non-collinear components are larger in the annealed samples.

PACS

75.50.Bb Fe and its alloys

25.40.Dn Elastic neutron scattering

75.50.Kj Amorphous and quasicrystalline magnetic materials

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