

When simple alloys turn into complicated

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In some cases, simple metallic alloys, whose magnetic behaviour is supposed to be well-known and, thus, they are not subject of further studies, might surprise us revealing anomalous behaviours that point towards a more complicated magnetic ground state.

This is the case of CeGe, a binary Ce-based alloy that was already studied in the 60's, and reported as a simple antiferromagnet [1], being this consideration accepted until recent times [2]. However, a careful study of this alloy has evinced that the magnetic ground state of this alloy must be more complex.

In the present work we will show experimental results that clearly prove that the magnetic structure of CeGe at low temperatures must be incommensurate. These results include microscopic probes, such as neutron diffraction or muon spectroscopy, and macroscopic measurements, among which the transport properties (electrical resistivity and thermoelectric power) are specially relevant, as they exhibit an anomalous behaviour at the Néel temperature that is indicative of a gap opening at the magnetic superzone.

[1] K.H.J. Buschow and J.F. Fast, *Phys. Stat. Sol.* **16**, 467 (1966).

[2] P. Schobinger-Papamantellos, M. Kenzelmann, A. Schenck, F.N. Gygax, K.H.J. Buschow and C. Ritter, *Physica B* **349**, (2004) 100.