Title:	Temperature dependent transport spin-polarization in the low Curie temperature complex itinerant ferromagnet EuTi1−xNbxO3
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Abstract:	The physical systems with ferromagnetism and 'bad' metallicity hosting unusual transport properties are playgrounds of novel quantum phenomena. Recently EuTi1−xNbxO3 emerged as a ferromagnetic system where non-trivial temperature dependent transport properties are observed due to coexistence and competition of various magnetic and non-magnetic scattering processes. In the ferromagnetic state, the resistivity shows a T2 temperature dependence possibly due to electron–magnon scattering and above the Curie temperature , the dependence changes to T3/2 behaviour indicating a correlation between transport and magnetic properties. In this paper, we show that the transport spin-polarization () in EuTi1−xNbxO3, a low Curie temperature ferromagnet, is as high (~40%) as that in some of the metallic ferromagnets with high Curie temperatures. In addition, owing to the low Curie temperature of EuTi1−xNbxO3, the temperature (T) dependence of could be measured systematically up to which revealed a proportionate relationship with magnetization versus T. This indicates that such proportionality is far more universally valid than the ferromagnets with ideal parabolic bands. Furthermore, our band structure calculations not only helped to understand the origin of such high spin polarization in EuTi1−xNbxO3 but also provided a route to estimate the Hubbard U parameter in complex metallic ferromagnets in general using experimental inputs.
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