

Abstract Submitted  
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**Greigite and Spinorbitronics**<sup>1</sup> BAOMIN ZHANG, GILLES DE WIJS, Institute for Molecules and Materials, Radboud University Nijmegen, ROB DE GROOT, Institute for Molecules and Materials, Radboud University Nijmegen; Institute for Advanced Materials, University of Groningen, ELECTRONIC STRUCTURE OF MATERIALS TEAM, SOLID STATE MATERIALS FOR ELECTRONICS TEAM — Greigite( $\text{Fe}_3\text{S}_4$ ) and magnetite( $\text{Fe}_3\text{O}_4$ ) are isoelectronic and isostructural ferrimagnets. In biology, the motility of magnetotactic bacteria is based on any or both of them. Not much work is known on greigite. Unlike half-metallic magnetite, greigite is a normal metal. Although the constituent elements are light, the complex Fermi-surface of greigite is remarkably sensitive to relativistic effects. The existence of several Fermi-surface sheets is dependent on the direction of the magnetization. This implies spintronics based on a homogeneous material rather than a device. Since this effect is intrinsically relativistic, spin-contamination is irrelevant here.

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