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Competing antiferromagnetism in a quasi-2D itinerant ferromagnet: Fe₃GeTe₂ ZHENG GAI, JIEYU YI, HOULONG ZHUANG, S.A. CALDER, P.R.C. KENT, Oak Ridge National Laboratory, DAVID MANDRUS, University of Tennessee, Knoxville, TN, OAK RIDGE NATIONAL LABORATORY COLLABORATION, UNIVERSITY OF TENNESSEE, KNOXVILLE, TN COLLABORATION — Fe₃GeTe₂ is known as an air-stable layered metal with itinerant ferromagnetism with a transition temperature of about 220 K. From extensive dc and ac magnetic measurements, we have determined that the ferromagnetic layers of Fe₃GeTe₂ order antiferromagnetically along the c-axis below 152 K. The antiferromagnetic state was further substantiated by theoretical calculation to be the ground state. A magnetic structure model was proposed to describe the antiferromagnetic ground state as well as competition between antiferromagnetic and ferromagnetic states. Fe₃GeTe₂ shares many common features with pnictide superconductors and may be a promising system in which to search for unconventional superconductivity.

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