

Abstract Submitted
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Hysteresis in weak ferromagnets¹ YA. B. BAZALIY², University of South Carolina, L.T. TSYMBAL, O. Galkin Donetsk Physics and Technology Institute, G.N. KAKAZEI³, Universidade do Porto, S.V. VASILIEV, O. Galkin Donetsk Physics and Technology Institute — Magnetic hysteresis is studied in the orthoferrites ErFeO₃ and TmFeO₃ using the single crystal samples of millimeter dimensions. It is shown that in both materials one observes a temperature transition manifesting itself through the temperature hysteresis of the magnetic moment and a peculiar temperature evolution of the field hysteresis loop shapes near this transition. Experiments rule out the hypothesis that the ordering of the orthoferrite's rare earth magnetic moments plays an important role in these phenomena. The hysteresis curves can be explained by a few-domain magnetic state of the samples that results from the weak ferromagnetism of the orthoferrites. The phenomenon is generic for weak ferromagnets with temperature dependent magnetization. A large characteristic magnetic length makes the behavior of the relatively big samples analogous to that observed in the nano-size samples of strong ferromagnets.

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²also at the Institute of Magnetism, Kyiv, Ukraine

³also at the Institute of Magnetism, Kyiv, Ukraine

Ya. B. Bazaliy
University of South Carolina

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