

Abstract Submitted
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Magnetic

Order in single-crystal BiFeO₃ MEHMET RAMAZANOGLU, SANG-WOOK CHEONG, VALERY KIRYUKHIN, Rutgers Univ. Physics Dept., WILLIAM RATCLIFF, NCNR, NIST, S. LEE, KAERI — We report neutron scattering studies of the magnetic order in multiferroic Bismuth Ferrite (BiFeO₃). In ferroelectric monodomain single crystals, there are 3 equivalent magnetic cycloidal domains. The cycloid period slowly grows with increasing temperature, and the antiferromagnetic transition is 2nd order. The equivalent magnetic domain populations do not change with temperature, except in the close vicinity of the Neel temperature. No evidence for the spin-reorientation transitions proposed in previous Raman studies is found. The magnetic cycloid is slightly anharmonic for T=5 K. The anharmonicity is much smaller than previously reported in indirect NMR studies. At room temperature, a circular cycloid is observed. The observed anharmonicity provides important clues for understanding electromagnons in BiFeO₃.

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