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Hidden order in Yb2TI2O7 ROBERT D'ORTENZIO, Department of Physics and Astronomy, McMaster University, HANNA DABKOWSKA, Brockhouse Institute for Materials Research, SARAH DUNSIGER, Physik-Department E21, Technische Universität München, TATSUO GOKO, Department of Physics, Columbia University, JAN KYCIA, Department of Physics and Astronomy, University of Waterloo, LIAN LIU, Department of Physics, Columbia University, TERESA MEDINA, TIMOTHY MUNSIE, Department of Physics and Astronomy, McMaster University, DAVID POMARANSKI, Department of Physics and Astronomy, University of Waterloo, KATE ROSS, Department of Physics and Astronomy, McMaster University, YASUTOMO UEMURA, Department of Physics, Columbia University, TRAVIS WILLIAMS, Department of Physics and Astronomy, McMaster University, GRAEME LUKE, Canadian Institute for Advanced Research, McMaster University
— We report low temperature specific heat and positive muon spin rotation (μ-SR) measurements of both polycrystal and single crystal $Yb_2Ti_2O_7$. Our zero field (ZF) μ-SR shows little spin relaxation temperature dependence in the polycrystal $Yb_2Ti_2O_7$, contrast to previously reported results. We observe no collinear ferromagnetic order, rather a hidden order ground state where spin fluctuations remain dynamic down to 16 mK. Single crystal $Yb_2Ti_2O_7$ zero field μ-SR measurements with the crystallographic <111> direction parallel to the initial muon polarization show small but measurable temperature dependence. In addition, our transverse field (TF) μ-SR measurements show the spin susceptibility undergoes a distinct change at temperatures corresponding to the magnetic transition measured in the specific heat.

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