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Non-Kramers doublet ground state of the triangular-lattice spin-liquid candidate TbInO3[1] MAI YE, XIANGHAN XU, XIANGYUE WANG, JAEWOOK KIM, SANG-WOOK CHEONG, GIRSH BLUMBERG, Department of Physics and Astronomy, Rutgers University-New Brunswick — Ferroelectric insulator $TbInO_3$ has been proposed to be a 2D spin-liquid candidate. This material has a Weiss temperature of -17K, but no magnetic ordering occurs down to 0.1K [Nat. Phys. 15, 262 (2019)]. It remains unclear whether the magnetic lattice has honeycomb or triangular symmetry at low temperature. We study the ground state properties of this system by probing its crystal-field (CF) excitations using inelastic light scattering. The experimentally established CF level scheme provides a satisfactory description for the low-temperature specific heat and entropy data. In particular, we demonstrate that the Tb ions have a non-Kramers doublet ground state, and these doublets from a triangular magnetic lattice.

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