

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Hunting a [111] magnetization plateau to test the quantum spin ice model in Tb₂Ti₂O₇ PETER BAKER, ISIS Facility, STFC Rutherford Appleton Laboratory, Didcot OX11 0QX, United Kingdom, MARIA MATTHEWS, Department of Physics and Materials Research Institute, Pennsylvania State University, University Park, Pennsylvania 16802, USA, SEAN GIBLIN, ISIS Facility, STFC Rutherford Appleton Laboratory, Didcot OX11 0QX, United Kingdom, PETER SCHIFFER, Department of Physics and Materials Research Institute, Pennsylvania State University, University Park, Pennsylvania 16802, USA, CHRISTOPHER BAINES, Laboratory for Muon-Spin Spectroscopy, Paul Scherrer Institute, Villigen CH-5232, Switzerland, DHARMALINGHAM PRABHAKARAN, Oxford University Department of Physics, Clarendon Laboratory, Parks Road, Oxford OX1 3PU, United Kingdom — The pyrochlore magnet Tb₂Ti₂O₇ may be described by a quantum spin ice model. This model predicts a magnetization plateau will occur for weak fields applied along the [111] axis at low-temperature. We have carried out muon-spin relaxation measurements to test this hypothesis. Features are observed at 15 and 65mT, agreeing with the predicted boundaries of the magnetization plateau. In the intermediate region the field dependence of the muon relaxation rate suggests a constant distribution of local magnetic fields of 10mT, and a constant fluctuation time of 20ns. ac susceptibility measurements are being carried out to investigate the bulk response on a longer timescale.

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Date submitted: 26 Nov 2010

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