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Evidence for a spinon Fermi surface in a triangular lattice quantum spin liquid candidate YAO SHEN, YAO-DONG LI, HONGLIANG WO, Fudan University, YUESHENG LI, Renmin University, SHOUDONG SHEN, BINGYING PAN, QISI WANG, Fudan University, HELEN WALKER, Rutherford Appleton Laboratory, PAUL STEFFENS, MARTIN BOEHM, YIQING HAO, Institut Laue-Langevin, DIANA QUINTERO-CASTRO, Helmholtz-Zentrum Berlin fur Materialien und Energie, LELAND HARRIGER, NIST Center for Neutron Research, MATTHIAS FRONTZEK, Oak Ridge National Laboratory, LIJIE HAO, SIQIN MENG, China Institute of Atomic Energy, QINGMING ZHANG, Renmin University, GANG CHEN, JUN ZHAO, Fudan University — In a quantum spin liquid (QSL), highly entangled spins remain disordered down to zero temperature due to strong frustration and quantum fluctuation. Such exotic quantum state can support fractionalized spin excitations called spinon. In this talk, we present neutron scattering measurements on a QSL candidate $YbMgGaO_4$, a highly frustrated antiferromagnet in which Yb ions form a quasi-two-dimensional triangular lattice. Broad spin excitations are revealed covering a wide region of the Brillouin zone which persists from the lowest measured energy to the zone boundary. The observed continuum is a key characteristic for spinon excitations, providing evidences for a QSL state in $YbMgGaO_4$ that has a spin-1/2 triangular lattice.

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