## Abstract Submitted for the MAR15 Meeting of The American Physical Society

Short-range correlations in the magnetic ground state of  $Na_4Ir_3O_8$ REBECCA DALLY, TOM HOGAN, Department of Physics, Boston College, ALEX AMATO, HUBERTUS LUETKENS, CHRIS BAINES, Laboratory for Muon Spin Spectroscopy, Paul Scherrer Institut, JOSE RODRIGUEZ-RIVERA, NIST Center for Neutron Research, National Institute of Standards and Technology, MICHAEL GRAF, Department of Physics, Boston College, STEPHEN WILSON, Department of Materials, University of California, Santa Barbara — The magnetic ground state of the candidate three-dimensional quantum spin liquid  $Na_4Ir_3O_8$  has been studied through bulk magnetization, muon spin relaxation and neutron scattering measurements.  $Na_4 Ir_3 O_8$  possesses a unique hyper-Kagome lattice of Ir moments that is potentially accompanied by a novel realization of Heisenberg-Kitaev exchange. This fact combined with the absence of previously reported magnetic ordering has led to its candidacy as a three-dimensional quantum spin liquid. Our combined experimental data show that a short-range, frozen, ground state comprised of quasi-static moments develops in this material below a characteristic temperature  $T_F = 6K$ , persisting down until at least 20 mK. The expected dynamical ground state of a quantum spin liquid was not observed but rather an inhomogeneous quasi-static spin state that survives with persistent long timescale fluctuations.

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