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Spin Correlations and Excitations in the Quasi-2D Triangular Bilayer Spin Glass LuCoGaO4 K. FRITSCH, McMaster University, Hamilton, G.E. GRANROTH, A.T. SAVICI, Neutron Scattering Sciences Division, ORNL, Oak Ridge, H.M.L. NOAD, McMaster University, Hamilton, H.A. DABKOWSKA, B.D. GAULIN, McMaster University, Brockhouse Institute for Materials Research, Hamilton — LuCoGaO4 is a layered magnetic-bilayer material wherein Co2+ magnetic moments and nonmagnetic Ga3+ ions are randomly distributed on planar triangular bilayers. This makes it an ideal case to study the interplay between geometric frustration, site disorder and low dimensionality and its influence on the magnetic ground of the system. This novel material has been grown for the first time in single crystal form at McMaster University. We have performed magnetization measurements, revealing a previously identified spin glass transition near Tf∼19K, and a Curie Weiss temperature of Tcw∼-96K, consistent with antiferromagnetic interactions[1]. We discuss time-of-flight neutron scattering measurements using SEQUOIA at SNS which elucidate the evolution of the static and dynamic spin correlations in LuCoGaO4 over a range of temperatures from T<< Tf to T>Tcw. We observe quasielastic scattering at (1/3,1/3,L) positions in reciprocal space and rods of scattering along the c*-direction, consistent with short range antiferromagnetic correlations within decoupled bilayers, and which comfirm the 2-dimensional character of this system. Inelastic scattering measurements show a gapped $\sim$ 12 meV spin excitation which softens and broadens in energy, filling in the gap on a temperature scale of $\sim$ Tcw/2. [1] Cava et al., J. Solid State Chem. 140, 337 (1998).

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