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Magnetic Excitations in the Stacked Quantum Magnets $NaNiO_2$ and $LiNiO_2$ J.P. CLANCY, B.D. GAULIN, J.P.C. RUFF, K.A. ROSS, G.J. VAN GASTEL, McMaster University, D.L. ABERNATHY, M.B. STONE, Oak Ridge National Laboratory — $NaNiO_2$ and $LiNiO_2$ are isostructural stacked triangular lattice quantum magnets, in which magnetism is conventionally thought to arise due to spin 1/2 moments carried by Ni^{3+} ions. Surprisingly, while $NaNiO_2$ undergoes a cooperative Jahn-Teller transition at 480K and magnetically orders below $T_N \sim 23$K, $LiNiO_2$ undergoes a glass transition at $T_g \sim 9$K and remains disordered down to the lowest measured temperatures. The absence of long-range magnetic order in $LiNiO_2$ has been attributed to either geometric frustration caused by mixing of the Li and Ni sublattices, or orbital degeneracy due to the absence of a coherent Jahn-Teller distortion. We have performed time of flight neutron scattering measurements on polycrystalline samples of $NaNiO_2$ and $LiNiO_2$ using the wide Angular-Range Chopper Spectrometer (ARCS) at the SNS. Our measurements reveal previously unobserved magnetic excitations at relatively high energy transfers, which we associate with ferromagnetic spin waves mediated by in-plane interactions. We also find evidence of critical scattering in $NaNiO_2$ near the magnetic phase transition at T_N. These results will be compared with previous measurements collected using the DCS at NIST.

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