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Spin wave excitations in kagome staircase $Co_3V_2O_8$ JOEL HELTON, SUSUMU JONES, US Naval Academy, SERGEI BARILO, Belarus Academy of Sciences, NICHOLAS BUTCH, JEFFREY LYNN, NIST Center for Neutron Research — $Co_3V_2O_8$ features spin-3/2 moments decorating a buckled kagome staircase lattice. While the ground state is a collinear ferromagnet, the $H-T$ phase diagram features a complex series of transversely polarized spin density wave states with a variable propagation vector that takes on multiple distinct commensurate and incommensurate values. The spin wave dispersion within the $(0\,K\,L)$ plane in the ferromagnetic phase has been fully mapped out using the DCS time-of-flight neutron spectrometer. While previous work has treated this compound as a quasi-two dimensional structure of weakly coupled kagome lattice planes we have measured significant spin wave dispersion along the b-axis, indicating a three dimensional lattice with significant coupling between the buckled kagome planes.

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