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^{51}V-NMR investigation of the spin-frustrated magnet $Ni_3V_2O_8$.[1]
W.G. CLARK, P. RANIN, GUOQING WU, G. GAIDOS, UCLA Physics and Astronomy, G. LAWES, Wayne State U. Physics, A.P. RAMIREZ, Lucent Bell Labs, R.J. CAVA, Princeton U. Chem., M. HORVATIC, C. BERTHIER, Grenoble High Magnetic Field Lab. — The Ni^{2+} ions in the Kagomé-staircase lattice compound $Ni_3V_2O_8$ form an electron spin $S = 1$ system with a geometrically frustrated magnetization and a rich variety of phases below 10 K. Here, we report a study of the local magnetic field and its fluctuations using ^{51}V NMR measurements of the spectrum, the spin-phase memory time (T_2), and the spin-lattice relaxation rate ($1/T_1$) over a broad range of magnetic field and temperature. Above 10 K, the local field from the Ni^{2+} ions follows a Curie-Weiss law. In the ordered phases below 10 K, the NMR spectrum has a very broad structure that changes according to the particular phase. Also, below 10 K, $1/T_1 \propto T^2$. These features suggest that $1/T_1$ is dominated by Ni^{2+} electron moment fluctuations whose dynamics are driven by two-dimensional antiferromagnetic coupling.

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