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Field-Dependent Instability of the Candidate Quantum Spin Liquid in $EtMe_3Sb[Pd(dmit)_2]_2$ as Revealed by NMR GEORGIOS KOUTROULAKIS, Los Alamos National Laboratory, TONG ZHOU, STUART E. BROWN, UCLA, JOE D. THOMPSON, Los Alamos National Laboratory, REIZO KATO, RIKEN — In recent years, the two-dimensional spin-1/2 triangular lattice of the organic salt $EtMe_3Sb[Pd(dmit)_2]_2$ has emerged as a candidate for the realization of a quantum spin liquid. Furthermore, thermal conductivity and nuclear magnetic resonance (NMR) experiments unveiled the presence of a low-temperature instability in the spin liquid state, the opening of a spin gap. We performed a detailed ^{13}C NMR study on this material at low temperatures ($30mK \leq T \leq 1.5$ K) and for a wide range of external magnetic field values ($B_0 = 0.6 - 9T$). In finite fields, a clear break in the temperature derivative of the spin-lattice relaxation is observed at a temperature $T_m(B_0)$, with T_m following the empirical form $T_m(B_0) \sim |B_0 - B_c|^{1/2}$. Moreover, a uniform broadening of the NMR line for finite fields suggests the presence of a small field-induced staggered magnetization. We discuss these results in the context of possible instabilities, and existing thermodynamic data.

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