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Proton Dynamics in the Anti-ferroelectric $\text{CsH}_3(\text{SeO}_3)_2$ by using ^1H NMR Measurements MOOHEE LEE, B. NDIAYE, K. KANG, H. KIM, J. SIM, KonKuk Univ., South Korea, AE RAN LIM, Jeonju Univ., South Korea — ^1H NMR techniques have been employed on the anti-ferroelectric $\text{CsH}_3(\text{SeO}_3)_2$ to measure spectrum, shift, T_1 and T_2 from 300 K down to 80 K at 4.85 T. The ^1H NMR spectrum at 300 K shows a composite structure; one dominant broad peak and two small narrow peaks. From the temperature dependences of both intensity and T_1 for each peak, we identify that the narrow peaks come from rapidly moving protons whereas the broad peaks originate from rigid protons. The spectra below 200 K show several peaks associated with six nonequivalent proton sites and also the T_1 decays show a non-exponential curve coming from many proton sites. T_1 is very long even at 300 K and becomes even longer at low temperature. By analyzing T_1 decays with T_{1S} and T_{1L} , we confirm that $1/T_1(T)$ show an activated behavior; the short component originates from proton dynamics with activation energy of ~ 140 K and the long component is associated with that of ~ 100 K. Further analysis suggests that some protons show an abrupt change in both shift and T_{1L} across T_c and may be responsible for the phase transition.

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