## Abstract Submitted for the MAR08 Meeting of The American Physical Society

<sup>11</sup>B NMR Study of Spin Structures and Dynamics in GdB<sub>4</sub> Single Crystal S.K. NAM, B.J. MEAN, S.K. KWON, S.H. CHOI, H.H. CHOI, MOOHEE LEE, Konkuk University, Seoul 143-701 Korea, B.K. CHO, GIST, Gwangju 500-712, Korea — We have performed <sup>11</sup>B NMR measurements on a single crystal of GdB<sub>4</sub> to investigate 4fspin structures and dynamics.  $^{11}B$  NMR spectrum, shift,  $1/T_1$  and  $1/T_2$  are measured down to 5 K at 8 T perpendicular to the c-axis. <sup>11</sup>B NMR shift and linewidth are huge and strongly temperature-dependent due to the 4f moments of Gd. In addition, both are proportional to the magnetic susceptibility, indicating that the hyperfine field at the boron site originates from the 4f spins of Gd. Below  $T_N = 42$  K, the single broad resonance peak of <sup>11</sup>B NMR splits into various peaks reflecting the onset of internal magnetic fields due to the antiferromagnetic spin arrangements. Assuming that the 4f moments of are aligned noncollinearly along the <110> direction in the basal plane perpendicular to the c-axis, we have calculated dipolar fields at the 16 boron nuclear sites from the 4f spins of Gd. The results show that the various peaks of <sup>11</sup>B NMR spectrum at 5 K are generally consistent with the calculation confirming that the noncollinear spin arrangement is correct. The relaxation rates,  $1/T_1$  and  $1/T_2$ , are independent of temperature above  $T_N$  and then decreases tremendously indicating the huge suppression of spin fluctuations below  $T_N$ .

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