NMR of ^{93}Nb perturbed by Quadrupole Interaction in Quasi-One-Dimensional $BaNbS_{3+d}$

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Field-swept NMR spectra of ^{93}Nb are examined for a sample of $BaNbS_{2.96}$ which has a semiconductive temperature dependence of the resistivity at low temperature, and a sample of $BaNbS_{3.03}$ which has a metallic temperature dependence at low temperature. Both spectra are so-called NMR powder patterns perturbed by a quadrupole interaction with a quadrupole frequency $\nu_Q = 3e^2qQ/2I(2I-1)h$ of 2.5 [MHz]. No appreciable difference in the spectra has been observed between the two samples, suggesting that the amplitude of the conduction electron density is too small to perturb the electronic environments around the niobium atoms. The general behavior of the nuclear spin-lattice relaxation of ^{93}Nb in both compounds is consistent with an interpretation that the relaxation at low temperature is dominated by a Korringa mechanism and at higher temperature by a quadrupole interaction.

Key words: NMR; ^{93}Nb; $BaNbS_3$; Quadrupole Interaction.