9.7 cm

RELAXATION OF ^{53}Cr SPIN ECHO SIGNALS IN $Cd_{0.985}Ag_{0.015}Cr_2Se_4$

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The frequency dependencies of relaxation times of NMR spin echo signals of quadrupole nuclei ^{53}Cr at t=2τ and t=4τ were measured in ferromagnetic semiconductor $Cd_{0.985}Ag_{0.015}Cr_2Se_4$ at the temperature T=4.2K. It was shown that in cadmium selenochromite there are two kinds of quadrupole nuclei Cr (Cr(I) and Cr(II)), which have quite different relaxation times. The existence of two kinds of Cr nuclei was connected with doping of cadmium selenochromite with Ag^+ ions. The nuclei ^{53}Cr(II) are sited in crystal ranges where rapid electron exchange between Cr^{4+} and Cr^{3+} ions leads to the rapid fluctuations in local electron magnetization vector. The nuclei ^{53}Cr(I) are located far from these dynamical defects. The experimental results were well explained by the developed theory of the two-pulse echoes relaxation. The main assumption of this theory is the assumption that the time fluctuations in the electron magnetization due to the fluctuations in hyperfine and quadrupole nuclear Hamiltonians leads to the relaxation of the spin echo signals.

13.4 cm

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