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NMR Studies of the Candidate Topological Superconductor $Sn_{1-x}In_xTe$: Spin-Triplet Superconductivity Robust against Magnetic Impurities X.R. LU, L. MA, J. DAI, P. WANG, B. NORMAND, W. YU, Department of Physics, Renmin University of China, Beijing, China, R.D. ZHONG, J. SCHNEELOCH, Z.J. XU, G.D. GU, Condensed Matter Physics and Materials Science Department, Brookhaven National Laboratory, NY 11973, USA — In-doped SnTe is a low-carrier-density semiconductor with strong spin-orbit coupling, and has been proposed to be a topological superconductor. We report nuclear magnetic resonance (NMR) studies of both ^{119}Sn and ^{125}Te nuclei, performed on single crystals of $Sn_{1-x}In_xTe$, where $T_c = 1.8$ K for $x = 0.1$. Under an applied field of 0.33 T, the spin-lattice relaxation rate $1/^{119}T_1$ drops rapidly below 1.2 K, indicating bulk superconductivity. We observe absolutely no change in the Knight shift with temperature when $T < T_c$, which in NMR is normally an indicator of spin-triplet superconductivity. We find no coherence peak below T_c in $1/^{119}T_1$, suggesting an unconventional order parameter but also the possible role of impurities. In the normal state we find that $1/^{119}T_1$ and $1/^{125}T_1$ have Fermi-liquid behavior at high fields, but at low fields show a large Curie-Weiss-type enhancement indicative of magnetic impurity effects. Thus the fact that T_c in our samples is insensitive to the sample purity suggests that superconductivity in $Sn_{1-x}In_xTe$ is robust against magnetic impurities, in contrast to the situation in conventional superconductors.

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