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Point Contact Andreev Reflection Spin Spectroscopy in MnSi Single Crystals PUSHKAL THAPA, RAGHAVA PANGULURI, Department of Physics and Astronomy, Wayne State University, Detroit, MI 48201, F. CARBONE, D. VAN DER MAREL, Département de Physique de la Matière Condensée, Université de Genève, CH-1211 Genève 4, Switzerland, A.A. NUGROHO, Materials Science Centre, University of Groningen, 9747 AG Groningen, The Netherlands and Jurusan Fisika, Institut Teknologi Bandung, Indonesia, B. NADGORNY, Department of Physics and Astronomy, Wayne State University, Detroit, MI 48201 — We have carried out a detailed investigation of magnetic and spin transport properties of MnSi, an itinerant helimagnet with the weak Dzyaloshinski-Moria interaction. MnSi single crystals were grown in the form of a rod by the floating zone technique and we used the center of the rod which is clean and free from any impurities for all our measurements. Magnetization measurements suggest the critical temperature, T_c of ~ 29 K with the saturation magnetic moment of $\sim 0.4\mu_B/\text{Mn}$ at 2 K. A T^2 – dependence of the resistance is observed near T_c , indicating that the transport is governed by spin fluctuations with a residual resistivity $\sim 20 \mu\Omega\cdot\text{cm}$. We used the point contact Andreev reflection (PCAR) technique with electrochemically etched superconducting niobium tips to observe the effects of spin polarization in a variable magnetic field as the magnetic structure of MnSi gradually transformed from helical - to conical - to weakly ferromagnetic.

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