

Abstract Submitted
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Crystal and Magnetic Structure of UNi_{0.52} KARUNAKAR KOTHAPALLI, New Mexico State University, MILTON TORIKACHVILI, San Diego State University, FARZANA NASREEN, HEINRICH NAKOTTE, New Mexico State University, NEW MEXICO STATE UNIVERSITY COLLABORATION, MILTON TORIKACHVILI COLLABORATION — We report the single crystal neutron diffraction studies done to resolve the room-temperature structure and the magnetic structure at 25 K of Uranium antimonide, UNi_{0.5}Sb₂. The time-of-flight single-crystal neutron diffraction experiments at room temperature and 25 K were done on the Single Crystal Diffractometer, SCD, at Los Alamos Neutron Science Center. Previous X-ray single crystal and neutron powder diffraction studies could not unambiguously resolve the structure because of the presence of hkl/2 type reflections. The studies were done on a 2 x 1 x 0.5 mm³ crystal and half-indexed reflections were observed corroborating the observations in previous studies. The room temperature structure that accounts for all the observed reflections is determined to be tetragonal P42/n m c with lattice parameters $a = 4.333(2) \text{ \AA}$ and $c = 17.868(6) \text{ \AA}$ respectively. The compound is found to order antiferromagnetically at 162 K and has a simple antiferromagnetic structure at 25 K with propagation vector $q = (0, 0, 0)$ and with a moment of $1.82\mu\text{B}/\text{U}$ atom.

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