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Crystal structure of $UNi_{0.5}Sb_2$ KARUNAKAR KOTHAPALLI, New Mexico State University, MILTON TORIKACHVILI, San Diego State University, HEINZ NAKOTTE, New Mexico State University — We report the single crystal neutron diffraction studies done to resolve the room-temperature structure of Uranium antimonide, $UNi_{0.5}Sb_2$. The time-of-flight single-crystal neutron diffraction experiments at room temperature 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 mm^3 crystal and half-indexed reflections were observed corroborating the observations in previous studies. The crystal structure that accounts for all the observed reflections is determined to be tetragonal $P4_2/n$ m c with lattice parameters a, b, c being 4.333(2) Å, 4.333(2) Å and 17.868(6) Å respectively. A preliminary study shows no crystal structure distortion below at 10K and the compound orders antiferromagnetically.

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