

Abstract Submitted
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Magnetism and hybridization effects in UCuSn SAMI EL-KHATIB, ANNA LLOBET, LANSCE-LC, Los Alamos National Laboratory, Los Alamos, AGUS PURWANTO, Neutron Scattering Laboratory, BATAN, Serpong, Tangerang 15314, Indonesia, A. ALSMADI, Physics Department, Hashemite University, 13115 Zarqa, Jordan, HEINZ NAKOTTE, Physics Department, New Mexico State University, Las Cruces NM 88003 — UCuSn crystallizes in an orthombically-distorted structure that is closely related to the hexagonal GaGeLi structure. Bulk studies reveal that UCuSn undergoes two magnetic transitions at about 60 and 25 K. Here, we present more detailed neutron-diffraction studies that performed on the High-Intensity Powder Diffractometer (HIPD) at the Manuel Lujan, Jr. Neutron Scattering Center at Los Alamos. Neutron-diffraction studies provide clear evidence for a non-collinear configuration of the magnetic moments in both magnetic phases. We propose a simultaneous existence of two magnetic allowed-symmetry structures as one possible explanation to fit the observed magnetic intensities below 25 K. We will discuss the relationship between magnetic and structural properties in UCuSn. We observe regular thermal contraction with decreasing temperature down to 60 K, below which we observe discontinuities for the interatomic spacings, d_{U-U} , d_{U-Cu} and the cell parameters, which provides a measure of the hybridization effects in UCuSn. We were able to correlate the structural changes with the magnetism in UCuSn.

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