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Magnetic Structure of the Heavy-fermion Compound $CeAuSb_2$ in Zero-field[1] GUY G. MARCUS, Institute for Quantum Matter and Johns Hopkins University, DAE-JEONG KIM, HANNOH LEE, ZACHARY FISK, University of California at Irvine, JOSE A. RODRIGUEZ-RIVERA, NIST Center for Neutron Research, COLLIN L. BROHOLM, Institute for Quantum Matter, Johns Hopkins University, and NIST Center for Neutron Research — We have used neutron diffraction to determine the zero-field magnetic structure of the heavy-fermion compound $CeAuSb_2$. Below $T_N \approx 6.2$K, we observe the development of antiferromagnetic Bragg diffraction consistent with previous transport and magnetization measurements. The intensities observed at 7 magnetic satellite locations indicate the staggered magnetization is predominantly along the c-axis. The maximum moment size is 1.15 ± 0.08 μ_B which is large compared with the 0.4 μ_B moment in the isostructural heavy fermion ferromagnet $CeAgSb_2$. This suggests that the antiferromagnetic $CeAuSb_2$ is deeper into a magnetic phase. The spin structure, due mainly to the Ce-4f sites, is described as a transverse polarized spin density wave with an incommensurate component of the wave vector in the basal plane. We will discuss these results and bulk measurements in terms of an ANNNI model and effective near neighbor exchange interactions.

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