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High Pressure Study of Electrical Resistivity of CeB6 to 136 GPa<sup>1</sup> NEDA FOROUZANI, JINHYUK LIM, JAMES SCHILLING, Washington University, GILBERTO FABBRIS, Advanced Photon Source, Argonne National Lab., Argonne and Washington University, ZACHARY FISK, Univ. California-Irvine — Since the 1960's the dense Kondo compound cerium hexaboride (CeB6) has attracted a great deal of interest. To investigate whether this material might evolve into a topological insulator under sufficient pressure, we have carried out four-point electrical resistivity measurements on CeB6 over the temperature range 1.3 K to 295 K in a diamond anvil cell to 136 GPa. Although a transition into an insulating phase is not observed, the evolution of the initial dense Kondo state under such extreme pressures is of considerable interest. As reported in earlier studies to 13 GPa [1], the temperature of the resistivity maximum near 3 K initially increases with pressure. We observe that between 33 and 53 GPa the resistivity maximum disappears and by 83 GPa CeB6 appears to have settled into a Fermi liquid state. The marked changes observed under pressure suggest that a change in valence and/or a structural transition may have occurred. Synchrotron x-ray diffraction measurements are being carried out to investigate possible changes in crystal structure under extreme pressures.

[1] Kobayashi et al., Physica B 281&282, 553 (2000)

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