

Abstract Submitted
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Pressure-induced Competition between Superconductivity and Kondo Effect in CeFeAsO_{1-x}F_x (x=0.16 and 0.3) LILING SUN, XI DAI, GENFU CHEN, NANLIN WANG, ZHIAN REN, XIAOLI DONG, QI WU, HONG DING, ZHONGXIAN ZHAO — We studied high-pressure behavior of CeFeAsO_{1-x}F_x superconductors with x=0.16 and x=0.3 by the *in-situ* measurements of electrical resistance, x-ray diffraction (XRD) and x-ray absorption spectroscopy (XAS) in a diamond anvil cell. A pressure-induced quantum phase transition from the superconducting state to the non-superconducting Kondo screened phase associated with a volume collapse was discovered in the layered CeFeAsO_{1-x}F_x compounds. This finding is the first observation of pressure-induced quantum phase transition from an electron pairing state in the conduction band to a Kondo screened state between conducting electrons and local moments, and reveals a physical picture of competition between Kondo singlet and BCS singlet in the Ce-pnictide superconductors.

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