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**Ce f-electron Kondo effect in the P- and F-doped CeFeAsO<sup>1</sup>** JIAN-HUI DAI, Zhejiang University, JIAN-XIN ZHU, Los Alamos National Laboratory, QIMIAO SI, Rice University — In addition to high temperature superconductivity, the iron pnictides in the CeFeAsO family also provide an opportunity to study the interplay between the f-electron Kondo effect and the d-electron antiferromagnetic or superconducting order. Both the P/As [1,2,3] and F/O substitutions suppress the long-ranged d-electron antiferromagnetic order, and F/O doping also induces superconductivity. With this d-electron phase diagram in mind, we study the Kondo effect in a tunable d-electron antiferromagnetic [4] or superconducting [5] order. We show that the d-electron orders promote frustrating J1-J2-J3 interactions among the f-moments, leading to a co-existing f-electron antiferromagnetic order. The suppression of the d-electron antiferromagnetic and superconducting orders revives the f-electron Kondo effect. The experimentally observed f-electron Kondo physics in the P-doped CeFeAsO and in the pressurized CeFeAsO<sub>1-x</sub>F<sub>x</sub> is discussed in the context of our theory. [1] J. Dai, Q. Si, J.-X. Zhu, and E. Abrahams, PNAS 106, 4418 (2009). [2] C. de la Cruz et al, arXiv:0907.2853 (2009). [3] Y. Luo et al, arXiv:0907.2961 (2009). [4] J. Dai, J.-X. Zhu, and Q. Si, PRB 80, 020505(R) (2009). [5] J. Dai, J.-X. Zhu, and Q. Si, to be published (2009).

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