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**Berezinskii-Kosterlitz-Thouless Transition in Heavy Fermion Superlattices** JIAN-HUANG SHE, Los Alamos National Laboratory, ALEXANDER BALATSKY, Los Alamos National Laboratory and Nordita — We propose an explanation of the superconducting transitions discovered in the heavy fermion superlattices by Mizukami et al. (Nature Physics 7, 849 (2011)) in terms of Berezinskii-Kosterlitz-Thouless transition. We observe that the effective mass mismatch between the heavy fermion superconductor and the normal metal regions provides an effective barrier that enables quasi 2D superconductivity in such systems. We show that the resistivity data, both with and without magnetic field, are consistent with BKT transition. Furthermore, we study the influence of a nearby magnetic quantum critical point on the vortex system, and find that the vortex core energy can be significantly reduced due to magnetic fluctuations. Further reduction of the gap with decreasing number of layers is understood as a result of pair breaking effect of Yb ions at the interface. Reference: Jian-Huang She, Alexander V. Balatsky, Phys. Rev. Lett. 109, 077002 (2012)

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