Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Fine tuning of the quantum criticality in the heavy fermion superlattices $CeRhIn_5/YbRhIn_5$ RYOTA ENDO, RINTARO TODA, YOUSUKE HANAOKA, MASAAKI SHIMOZAWA, TAKUYA YAMASHITA, YUSUKE SHIMOYAMA, SHIGERU KASAHARA, YOSHI TOKIWA, YUITI KASAHARA, Kyoto University, TAKASADA SHIBAUCHI, The university of Tokyo, TAKAHITO TERASHIMA, YUJI MATSUDA, Kyoto University — Bulk $CeRhIn_5$ shows an antiferromagnetic order at $T_N = 3.8$ K. Using molecular beam epitaxy, we fabricate artificial superlattices $CeRhIn_5(m)/YbRhIn_5(7)$ (m = 2, 3, 4, 5, 9) containing m layers of $CeRhIn_5$ alternating with seven layers of the nonmagnetic metal $YbRhIn_5$. With decreasing m, T_N is seriously reduced and nearly vanishes at the $m = 3$, indicating the dimensional tuning of the quantum criticality. When the magnetic field is applied to $m = 3$ superlattice perpendicular to the plane, T-linear resistivity, a hallmark of non-Fermi liquid, persists down to 50 mK, demonstrating the fine tuning of the quantum critical point

Ryota Endo
Kyoto University

Date submitted: 13 Nov 2014 Electronic form version 1.4