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Controllable Rashba spin-orbit interaction in artificially engineered superlattices $CeCoIn_5/YbCoIn_5$ MASAAKI SHIMOZAWA, Department of Physics, Kyoto University, SWEE GOH, Department of Physics, Chinese University of Hong Kong, RYOTA ENDO, RYO KOBAYASHI, TATSUYA WATASHIGE, YUTA MIZUKAMI, HIROAKI IKEDA, Department of Physics, Kyoto University, HIROAKI SHISHIDO, Department of Physics and Electronics, Osaka Prefecture University, YOUICHI YANASE, Department of Physics, Niigata University, TAKAHITO TERASHIMA, Research Center for Low Temperature and Materials Science, Kyoto University, TAKASADA SHIBAUCHI, YUJI MATSUDA, Department of Physics, Kyoto University — Recently the inversion symmetry breaking (ISB) together with strong spin-orbit interaction is suggested to affect the electron pairing in superconductivity, leading to various physical phenomena. However, it is hard to tune the degree of ISB in bulk crystals because the degree is determined by the crystal structure itself. Here, by using the molecular beam epitaxy technology, we fabricate artificial heavy fermion superlattices with the alternating layers of heavy fermion $CeCoIn_5$ and nonmagnetic metal $YbCoIn_5$ with atomic scale thicknesses. We demonstrate that the Rashba spin-orbit interaction arising from ISB is largely tunable by introduction of the thickness modulation in $YbCoIn_5$ block-layers, which leads to profound changes in the nature of the superconductivity.

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