

Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Giant Rashba spin splitting in Bi bilayer induced by a 2D ferroelectric substrate JIANBAO ZHU, University of Science and Technology of China, DI XIAO, Carnegie Mellon University, WENGUANG ZHU, University of Science and Technology of China — Based on density functional theory calculations, we discover that a Bi layer when placed on the top of a recently predicted 2D ferroelectric material with spontaneous out-of-plane electric polarization can exhibit giant Rashba-type spin splitting of over 200 meV, while the whole system still remains semiconducting. In addition, the magnitude of the Rashba spin splitting can be tuned by switching the dipole orientation of the 2D ferroelectric substrate. This finding provides a promising 2D material system for spintronics.

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Date submitted: 06 Nov 2015

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