

Abstract Submitted  
for the MAR15 Meeting of  
The American Physical Society

**Building topologic device through emerging robust helical surface states** ZIBO WANG, International Center for Quantum Materials, Peking University, Beijing, China, HUA JIANG, College of Physics, Optoelectronics and Energy, Soochow University, Suzhou, China, XINCHENG XIE, International Center for Quantum Materials, Peking University, Beijing, China — In a 3D  $Cd_3As_2$  ribbon with proper sizes, the system can exhibit a unique finite-size effect. Namely, if magnetic impurities are doped on one side, the surface states on the other side can be altered according to the strengths of these magnetic impurities. As a result, the conductance of the system will also be changed. This finding can be explained by the backscattering between the hybridized surface states due to finite size confinement and the normal surface states. Moreover, this phenomenon can be used to build new topologic devices.

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Date submitted: 11 Nov 2014

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