

Abstract Submitted  
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**Localized States and Quantum Spin Hall Effect in Si-Doped InAs/GaSb Quantum Wells** DONG-HUI XU, Zhejiang University, JIN-HUA GAO, Huazhong University of Science and Technology, CHAO-XING LIU, The Pennsylvania State University, JIN-HUA SUN, Zhejiang University, FU-CHUN ZHANG, Univ of Hong Kong, YI ZHOU, Zhejiang University — We study localized in-gap states and quantum spin Hall effect in Si-doped InAs/GaSb quantum wells. We propose a model describing donor and/or acceptor impurities to describe Si dopants. This model shows in-gap bound states and wide conductance plateau with the quantized value  $2e^2/h$  in light dopant concentration, consistent with recent experiments by Du et al.[arXiv: 1306.1925] We predict a conductance dip structure due to backward scattering in the region where the localization length  $\xi$  is comparable with the sample width  $L_y$  but much smaller than the sample length  $L_x$ .

Fu-Chun Zhang  
Univ of Hong Kong

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