**Topological magnons in a one-dimensional itinerant flat-band ferromagnet**

Xiao-Fei Su1,2, Zhao-Long Gu1, Zhao-Yang Dong1, and Jian-Xin Li1,3

1National Laboratory of Solid State Microstructures and Department of Physics, Nanjing University, Nanjing 210093, China

2School of Physics and Electronic Information, Huaibei Normal University, Huaibei 235000, China

3Collaborative Innovation Center of Advanced Microstructures, Nanjing University, Nanjing 210093, China

Different from previous scenarios that topological magnons emerge in local spin models, we propose an alternative that itinerant electron magnets can host topological magnons. A one-dimensional Tasaki model with a flatband is considered as the prototype. This model can be viewed as a quarter-filled periodic Anderson model with impurities located in between and hybridizing with the nearest-neighbor conducting electrons, together with a Hubbard repulsion for these electrons. By increasing the Hubbard interaction, the gap between the acoustic and optical magnons closes and reopens while the Berry phase of the acoustic band changes from 0 to π, leading to the occurrence of a topological transition. After this transition, there always exist in-gap edge magnonic modes, which is consistent with the bulk-edge correspondence. The Hubbard interaction-driven transition reveals a new mechanism to realize nontrivial magnon bands.