

Abstract Submitted
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Connecting the dots: Time-reversal symmetric Weyl semimetals with tunable Fermi arcs¹ VATSAL DWIVEDI, SRINIDHI RAMAMURTHY, Univ of Illinois - Urbana — Weyl semimetals exhibit Fermi arc surface states: a line of zero energy surface modes connecting surface projections of Weyl nodes of opposite chiralities. Generically, a set of Weyl nodes can be connected by the Fermi arcs in multiple ways, and a natural question is whether these different connectivities can be deformed into each other by only varying the bulk Hamiltonian. In this talk, we present explicit lattice models for noninteracting, time reversal symmetric ($T^2 = +1$) Weyl semimetals, in which the connectivities of the Fermi arcs can indeed be interpolated continuously by tuning a parameter in the Hamiltonian, without affecting the location and chiralities of the Weyl nodes. The bulk polarization and magnetization in the ground state are shown to vary with the tuning parameter, which can potentially be a measurable effect. This talk is based on arXiv:1608.01313.

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