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【143】 Classification and higher-order topology of triple nodal points

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We investigate triple nodal points, i.e., three-fold degeneracies of energy bands in the momentum space of three-dimensional crystalline solids. First, based on the symmetries required for their stability, we develop a classification of triple nodal points in weakly spin-orbit-coupled materials. Second, by combining the derived classification with symmetry indicators for corner charges, we find that pairs of triple points in semimetals are associated with monopole charges and higher-order topology. The higher-order bulk-boundary correspondence of such triple-point pairs is a quantized fractional jump in the momentum dependence of the electric charge localized at the crystal hinges. I will illustrate these results using first-principles calculations for the compound Sc_3AlC in applied strain.

Primary authors: LENGGENHAGER, Patrick M. (Paul Scherrer Institut); LIU, Xiaoxiong (University of Zurich); TSIRKIN, Stepan (University of Zürich); Prof. NEUPERT, Titus (University of Zurich); Dr BZDUŠEK, Tomáš (Paul Scherrer Institut)

Presenter: LENGGENHAGER, Patrick M. (Paul Scherrer Institut)

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