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# Chiral Edge States on Surface Terraces in Weyl Semimetals

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The physical realization of Chern insulators is of fundamental and practical interest, as they are predicted to host the quantum anomalous Hall effect and topologically protected chiral edge states which can carry dissipationless current. However, progress has been slow because of the complex heterostructures and sub-Kelvin temperatures required. Time-reversal symmetry breaking Weyl semimetals, being essentially stacks of Chern insulators with interlayer coupling, may provide a new platform for the higher temperature realization of robust QAHE edge states.

Using scanning tunneling spectroscopy (STM) of a newly discovered magnetic Weyl semimetal, $Co_3Sn_2S_2$, we find that chiral edge states are localized on partially exposed Kagome planes on the surface. Our experiment and theory results suggest a new paradigm for studying chiral edge modes in Weyl semimetals. More importantly, this work leads to a practical route for realizing higher temperature QAHE.

*Upper left: surface terrace schematic and theoretical simulation of localization of edge chiral edge states. Upper right: STM image of surface terrace. Lower left: STM image showing density of terrace-localized bound states. Lower right: energies of terrace-bound states exhibiting linear dispersion*

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