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Creating chiral anomalies BARRY BRADLYN, JENNIFER CANO, ZHIJUN WANG, MAX HIRSCHBERGER, N. PHUAN ONG, B. ANDREI BERNEVIG, Princeton University — Materials with intrinsic Weyl points should present exotic magnetotransport phenomena due to spectral flow between Weyl nodes of opposite chirality - the so-called "chiral anomaly". However, to date, the most definitive transport data showing the presence of a chiral anomaly comes from Dirac (not Weyl) materials. These semimetals develop Weyl fermions only in the presence of an externally applied magnetic field, when the four-fold degeneracy is lifted. In this talk we examine Berry phase effects on transport due to the emergence of these field-induced Weyl point and (in some cases) line nodes. We pay particular attention to the differences between intrinsic and field-induced Weyl fermions, from the point of view of kinetic theory. Finally, we apply our analysis to a particular material relevant to current experiments performed at Princeton.

Barry Bradlyn
Princeton University

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