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Probing Weyl nodes with neutron scattering MICHAEL BJERNGAARD, Johns Hopkins University, United States of America, BOGDAN GALILO, Imperial College London, United Kingdom, ARI TURNER, Johns Hopkins University, United States of America — We present a general expression for the cross-section and polarization of a scattered beam of neutrons within a band description of Weyl semimetals. This differential cross-section has features that reflect the scattering between nodes of either the same or opposite Chern numbers / spin-momentum locking. The strength of the coupling to neutrons is determined by an "anomalous" magnetic moment of the Weyl electrons, which can be very strong, since it diverges close to a topological phase transition. This coupling is anisotropic along the direction vector separating the two Weyl nodes, even when the dispersions at the nodes themselves are isotropic, as is revealed in the cross-section.

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