The magnetic and crystal symmetries of $EuCd_2As_2$ and their role in generating a single pair of Weyl points

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We are in an intriguing era of condensed matter physics where much of our efforts are focused on the search for solutions to relativistic quantum mechanical wave-equations in solid state materials. However, whereas originally these exotic particles were born of 'beautiful' simplifications of the Dirac equation, in materials they require a careful tuning of numerous factors to achieve - and even then, rarely is the ideal situation found leaving some ambiguity to the titular quasiparticles' observation. For instance, in the search for the massless chiral Weyl particle, most systems have numerous Weyl points and other trivial bands near the Fermi energy adding higher order interactions and obscuring the desired physics in all but ARPES measurements. Here we discuss the discovery of a Weyl semi-metal with a more ideal set of conditions – a single pair of Weyl points generated by broken time reversal symmetry which live close to the Fermi Energy. Using a combination of neutron scattering, density functional theory and careful transport measurements we elucidate the relevant symmetries, their implications for the band structure and show the resultant transport properties suggesting the clear presence of topological physics.