

Abstract Submitted
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Magnetic structure of frustrated heavy fermion $\text{Yb}_2\text{Pt}_2\text{Pb}$ WOJCIECH MILLER, LIUSUO WU, State Univ of NY- Stony Brook, JEFFREY W. LYNN, NIST Center for Neutron Research, MEIGAN C. ARONSON, State Univ of NY- Stony Brook and Brookhaven National Laboratory — Different realisations of frustrated magnetic systems attract a lot of interest due to the emergence of many exotic ground states where interplay of frustration and quantum effects is present. Among these systems, tetragonal $\text{Yb}_2\text{Pt}_2\text{Pb}$ is believed to be a $4f$ electron realisation of frustrated Shastry-Sutherland lattice (SSL), with antiferromagnetic order emerging below $T_N = 2.07$ K [1] and where series of subsequent plateaus in the magnetisation suggests a complex magnetic phase diagram [2,3]. With neutron diffraction experiments we have found a solution of the magnetic structure of $\text{Yb}_2\text{Pt}_2\text{Pb}$ that reproduces the magnetic intensities observed both in powder and single crystal data below T_N . The paramount finding is that this magnetic structure shows some features of classical 2D SSL lattice, where magnetic moments are confined within the tetragonal plane, as well as the presence of distinct antiferromagnetic dimers. There are indications as well that spin chain physics may be important.

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- 1) Kim et al., Phys. Rev. B 77, 144425 (2008)
- 2) Kim et al., PRL 110, 017201 (2013)
- 2) Shimura et al., J. Phys. Soc. Jpn. 81, 103601 (2012)

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