

# **Frustrated Magnetism: What we can learn from Neutron Diffraction about under constrained spins.**

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It is now well appreciated that the combination of antiferromagnetic interactions and lattice symmetries based on triangles lead to phenomena known broadly as geometrical frustration. The spin system under question cannot simultaneously satisfy all of its near neighbour pair-wise exchange interactions and the resulting ground state can have a large degeneracy, or under constrained.

After a brief comparison between neutron and X-ray diffraction I will demonstrate, through examples, the power of neutron diffraction to study these complicated magnetic systems where ground states ranging from long range order [1,2] to a spin liquid [3] to spin ice [4] can be found. Polycrystalline and single crystal [1-4] samples will be discussed as well as the various types of diffractometers used.

## **REFERENCES**

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