

Dynamic Structure Factor Simulations of Common Magnetic Excitations in Solids

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This talk will be introducing the basics of dynamic structure factor simulations of common magnetic excitations in solids. Starting with the general concepts of excitations, and illustrating these by using a specific spin wave example system, the neutron spectrum for this system will be calculated analytically. Afterwards, it will be time to switch to the computational implementation of the same system using the open source package SpinW [1, 2]. To further demonstrate the capabilities of SpinW and getting used to its workflow, a more complex spin wave system will be simulated. Finally, my personal research, concerning dynamics of spin dimer systems, will be introduced and it will be explained how inelastic neutron spectra simulations helped me to solve open questions, and even clarify the magnetic structure of a specific material studied experimentally.

References

[1] S. Toth and B. Lake, J. Phys.: Condens. Matter 27, 166002 (2015).

[2] S.Ward, Webpage: <http://spinw.org>.