

## Physics research talks 2017-18

Ever wondered what goes on behind the lab doors? Come and find out!

**Kelly Morrison**

*When a lab just won't cut it: Experiments in a Beamline*

Wed 13 Dec, 14.00, U0.05 — all welcome

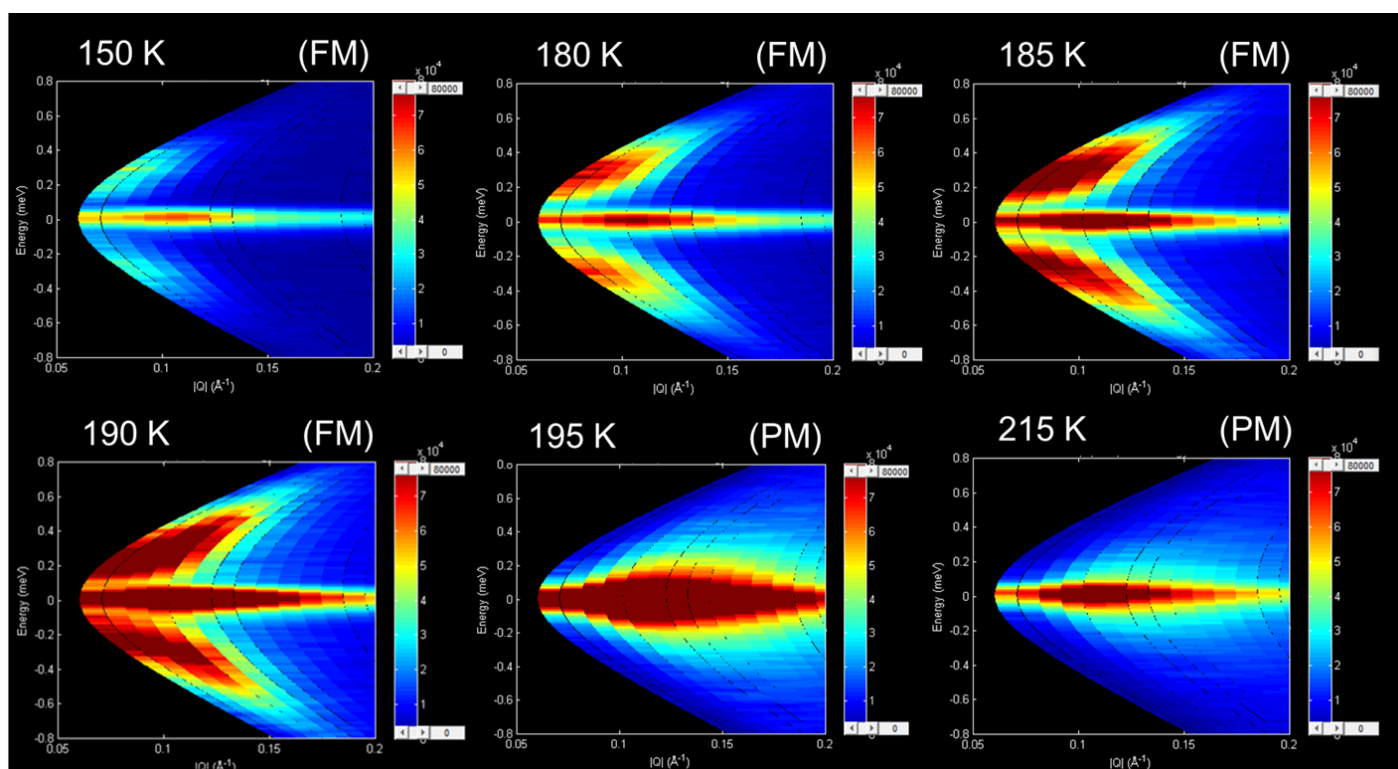


Figure: Inelastic powder diffraction of itinerant metamagnet  $\text{La}(\text{Fe,Si})_{13}$ .

For one reason or another, sometimes the information available with standard characterisation techniques available in the lab (such as X-ray diffraction, Scanning Electron Microscopy, or Magnetometry) does not provide enough detail to fully understand a physical system. A classic example of this is trying to prove that you have an antiferromagnet: difficult if the magnetisation does not appear to change much as you increase the applied magnetic field. Another would be trying to identify the position of hydrogen atoms in a crystal structure: difficult with X-ray diffraction due to low scattering/contrast. This is where neutron and synchrotron research can come in handy, by providing different interaction mechanisms (magnetic contrast with neutron scattering can be used to prove antiferromagnetic order), or more intense incident X-rays. This type of research requires significant investment, however, and so is often found in large facilities around the world. I will walk you through examples of such large facility use, and where it comes in handy for the physical sciences.

Please let John Samson know if you would like to offer a talk next semester.