

KOALA The Single-Crystal Neutron Diffractometer

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The KOALA diffractometer is in its commissioning phase and will soon be accepting experimental proposals. The instrument is based on the successful VIVALDI diffractometer at the ILL, Grenoble and is optimised for minimal sample size and/or experiment time. For the case of KOALA this means crystal sizes down to 0.03 mm^3 or full data sets being collected in 3 hours, though more typical values are 0.3 mm^3 and 24 hours.

It is expected that the majority of crystallography experiments will be those that are difficult or impossible to perform using X-ray methods, such as

- accurate location of the proton position for hydrogen
- distinguishing atoms with similar Z (C & N & O or Pb & Bi)
- light atoms among heavy (organometallics, Hg & O)
- ability to distinguish isotopes (hydrogen and deuterium)
- scattering from magnetic moment of atoms (Co, Fe)
- disordered structures
- unusual sample environments (4K to 800K, gas, electric field, high pressure)
- combinations of the above

An update on the commissioning progress will be presented along with examples of typical experiments.