




**ESRF**

 <b>ESRF</b>	<b>Experiment title:</b> Magnetic, quadrupolar and structural phase transitions in PrB <sub>6</sub>	<b>Experiment number:</b> BM-28-01-737
	<b>Beamline:</b> BM28	<b>Date of experiment:</b> from: 29/06/2005                      to: 05/07/2005
<b>Shifts:</b> 18	<b>Local contact(s):</b> Danny MANNIX	<i>Received at ESRF:</i>
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Report:

This experiment was part of a series investigating the different phase transitions in PrB<sub>6</sub>. Upon successful completion of the experiments the results were published in Physical Review B. Given below is the abstract to this article which can be found at: Physical Review B **79** (2009) 054402

We have made an extensive study of PrB<sub>6</sub> using X-ray resonant scattering to investigate both the lattice and magnetic properties. We have identified a structural distortion associated with the incommensurate to commensurate magnetic phase transition at  $T = 4.5$  K. Magnetic satellite reflections have been observed in the incommensurate and commensurate phases. The azimuthal dependence of the scattered intensity from the commensurate magnetic satellite reflection at  $(\frac{1}{2}, \frac{5}{4}, \frac{5}{4})$  is consistent with the model for the magnetic structure deduced from earlier neutron diffraction results. Evidence for possible quadrupolar ordering is discussed.