	Experiment title: **Magneto-vibrational anomalies in NpO_2**	**Experiment number**: HC2505
Beamline: ID28	**Date of experiment**: from: 2/June to: 7/June/2016	**Date of report**:
Shifts: 14	**Local contact(s)**: L. Paolasini	*Received at ESRF:*

Names and affiliations of applicants (* indicates experimentalists):

***L. Paolasini (ESRF)**

***R. Caciuffo (ITU, Karlsruhe)?**

***N. Magnani (ITU, Karlsruhe)?**

***G. H. Lander (ITU, Karlsruhe)**

I do not know if anyone else was here, and my presence was "fleeting" as I left on 4/6.

Report:

Measurements using ID28 on the phonons of NpO_2 has been published.

P. Maldonado, L. Paolasini, P. M. Oppeneer, T. R. Forrest, A. Prodi, N. Magnani, A. Bosak, G. H. Lander, and R. Caciuffo, Phys. Rev. B **93**, 144301 (4-April-2016)

The present experiment was a re-examination of the low-energy acoustic phonons to determine whether there was any sign of the predicted *mixing* of these phonons (thus giving rise to anomalies in the intensities across the BZ) with the excitations from the quadrupolar moments known to exist in NpO_2 below 25 K [see P. Santini *et al.,* Rev. Mod. Phys. **81**, 807 (2009)]. A quick look at these modes at low temperature was made during the earlier NpO_2 experiment and some possible anomalies were observed.

On careful examination of the acoustic modes at low temperature in the present experiment no observable effects were found. The earlier effects were ascribed to sample movement during rotation in the beam.

More recently, we have been able to detect signs of the quadrupole acoustic waves, but in UO_2. Once these are measured and understood with X-rays, it is possible we shall want to return to the interesting case of NpO_2.