**Ce3Bi4Pt3 and Ce3Bi4Pd3 in Pulsed Fields**

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**Introduction**

We performed magnetization (P15985-E002) and torque magnetometry (P15985-E005) experiments for Ce3Bi4Pt3 and Ce3Bi4Pd3 single crystals in pulsed fields. The main goal of these experiments is to tune with field the hybridization gap of these Kondo systems, and to map their Fermi surfaces from bulk experiments via quantum oscillations (QOs) that could reveal important new insight into topological phases in correlated materials.

**Experimental**

The experiments were carried out in the 65 T multi shot (25 ms) magnets at NHMFL-LANL, and in temperatures as low as 0.4 K. For Ce3Bi4Pt3, magnetization was measured using a sample-in/sample-out technique for background subtraction; additional search for QOs via de Haas–van Alphen (dHvA) effect experiments was done using a compensated coil system specifically designed for this purpose. Magnetic torque was measured for Ce3Bi4Pt3 and Ce3Bi4Pd3 single crystals using sensitive piezo cantilevers and a sample rotator. Due to the small size of the samples, magnetic fields were not oriented to any specific crystallographic axis.

**Results and Discussion**

The magnetization (**Fig.1**) of Ce3Bi4Pt3 displays a deviation from linear behavior near 30 T, coinciding with the expected magnetic field necessary for closing the Kondo hybridization gap [1]. This transition became more pronounced as temperature was reduced during the torque measurements (**Fig.2**). For Ce3Bi4Pd3, the abrupt change in torque signal occurs at lower fields (**Fig.3**), consistent with the much lower Kondo energy scale previously discussed [2]. In both compounds, the torque signal oscillates for some field orientations (**Figs.2-3**), i.e. the magnetization does not simply saturate. This effect will be further investigated.

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| **Fig.1-2** Magnetization and magnetic torque of Ce3Bi4Pt3. **Fig.3** Magnetic torque of Ce3Bi4Pd3. |

**Conclusions**

We observed for both Ce3Bi4Pt3 and Ce3Bi4Pd3 clear features in magnetization and torque consistent with the onset of hybridization gap closure with magnetic field. In the metallic state, non-monotonic behavior of the torque signal requires further investigation at higher magnetic fields. The dHvA effect experiments performed in the Ce3Bi4Pt3 sample using the compensated coils system did not show any clear indications of quantum oscillations (not shown) within the noise level and vibrations background of the experiments, and within the measured field and temperature range.

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**References**

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