**Angle-dependent phase diagram of URu2-xFexSi2 around the hidden order**

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**Introduction**

 The heavy fermion system URu2Si2 has long been a topic of great interest in condensed matter physics, as the nature of its so-called “hidden order” phase (HO) has remained a mystery for decades. Many attempts at novel characterizations for this compound have been made in order to uncover the underlying physics manifested as the HO.

**Experimental**

We performed experiments on single crystals of URu2-xFexSi2 at the NHMFL in LANL, in order to probe the nature of the HO and large-moment antiferromagnetic (LMAFM) phases in this compound. Our measurements at LANL used a pulsed magnet up to fields of 65 T where we measured the magnetoresistance at multiple temperatures for concentrations, x = 0, 0.2, covering the HO and LMAFM sides of the *T* vs. *x* phase diagram previously mapped to high fields by Ran *et al.*,[1] with magnetic field *H* applied at various angles *θ* between the c-axis and the ab-plane from -90 to +90 degrees. At fixed *T*, we swept *H* through the HO and LMAFM transitions for the x = 0 and 0.2 samples, respectively, with *H* at several fixed *θ*, in order to characterize the behavior of the field-induced phase transitions as a function of angle.

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**Fig. 1 -** Magnetoresistance vs. *H* for multiple angles *θ*

**Results and Discussion**

From the pulsed field measurements, we can observe the relationship between *THO* and *θ* to help characterize the anisotropic HO. Figure 1 is a representative plot of magnetoresistance vs *H* at various *θ* which demonstrates how the *T* vs. *H* phase diagram varies with angle for URu2Si2 and related compounds.

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**References**

[1] Ran, S., *et al*.,to appear in *Proceedings of the National Academy of Sciences* (2017).