

Magnetization Study of the Superconductivity in Sr_2RuO_4

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The layered ruthenate Sr_2RuO_4 has attracted much interest because of its spin-triplet superconductivity. Recent specific heat experiments under in-plane fields revealed the existence of a novel superconducting transition just below H_{c2} [1]. In order to clarify the high-field phase, we performed detailed magnetization measurements down to 0.1 K.

Figure 1 shows an example of the magnetization curves in Sr_2RuO_4 for $H//[100]$. A small but distinct kink structure is observed at 8.9 kOe ($=H_k$), indicating the presence of an additional superconducting phase transition [2]. A rapid increase of magnetization is also observed just below H_{c2} . These anomalies disappear when the field is tilted from the RuO_2 plane only by a few degrees. Possible origins of the magnetization anomaly are discussed from the viewpoint of the pairing symmetry.

[1] K. Deguchi *et al.*, J. Phys. Soc. Jpn. **71**, 2839 (2002)

[2] K. Tenya *et al.*, J. Phys. Soc. Jpn. **75**, 023702 (2006)

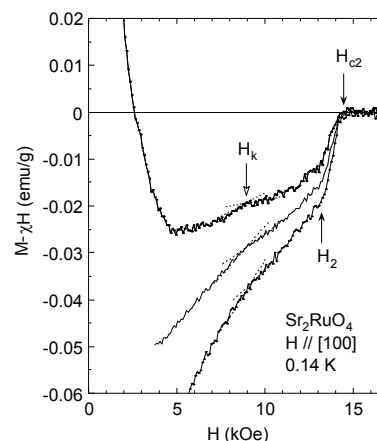


Fig. 1: Magnetization curves of Sr_2RuO_4