

表題：重い電子系超伝導体 Ce<sub>0.95</sub>Nd<sub>0.05</sub>CoIn<sub>5</sub>

## Heavy-fermion superconductor Nd<sub>0.05</sub>Ce<sub>0.95</sub>CoIn<sub>5</sub>

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Heavy-fermion superconductor Ce<sub>0.95</sub>Nd<sub>0.05</sub>CoIn<sub>5</sub> (tetragonal structure, space group P4/mmm, T<sub>c</sub> ~ 1.8 K) attracts much attention because it shows an extended antiferromagnetic ordered phase which only exists in its SC phase [1]. Here we performed SANS measurements to study interactions between the SC and the AFM order.

To study the so-called Q-phase (AF phase), we tried to measure diffractions from the 2q peak of the AFM order. On the other hand, to study its SC properties, we searched diffractions from the vortex lattice. For the measurements, we grew single crystals of Ce<sub>0.95</sub>Nd<sub>0.05</sub>CoIn<sub>5</sub> with a typical size of 3 × 2 × 0.2 mm<sup>3</sup> by self-flux method and T<sub>c</sub> of the crystals was evaluated to be T<sub>c</sub> = 1.8 K by magnetization measurements. Total amount of 0.557 g single crystals were coaligned with their [001] and [110] axes horizontal like Fig1. First, we measured vortex lattice signals by applying a magnetic field parallel to [001]. Next, we tried to observe the 2q peak of the AFM order below 0.8 K by tilting the sample 4.4 degrees away from the vertical axis and 10 degrees around the [110] axis. In both measurements, we could not detect any clear signal. We will analyze data in more detail.

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### References

[1] M. Kenzelmann, Th. Strässle, C. Niedermayer, M. Sgrist, B. Padmanabhan, M. Zolliker, A. D. Bianchi, R. Movshovich, E. D. Bauer, J. L. Sarrao, J. D. Thompson, *Science* 321, 1652 (2008)

使用施設：JRR-3M，装置：C1-2:SANS-U  
分野：Strongly Correlated Electron Systems

Activity Report on Neutron Scattering Research: Experimental Reports –Online Version–

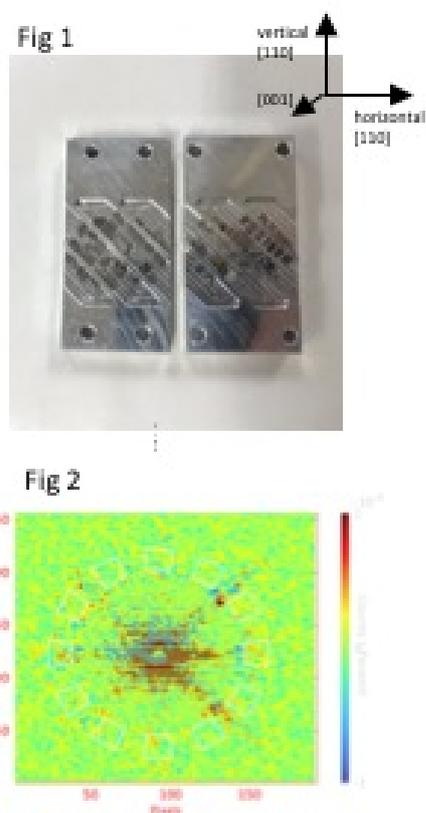


Fig. 1. Fig1 Mosaic of Single crystals of Ce<sub>0.95</sub>Nd<sub>0.05</sub>CoIn<sub>5</sub> Fig2 SANS patterns at T = 0.03 K in H = 3 T with 50 mT wiggling