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Associate Professor

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Summary

I have been working on the experimental condensed matter physics under extreme conditions using high magnetic field (including pulsed high magnetic fields), high pressure (using various types of pressure cells), and low temperature (using dilution refrigerators). My target materials include semimetals, narrow-gap semiconductors, topological materials, heavy fermion systems, *etc*. Also, I aim at quantitative analyses of experimental data making effective use of first-principles calculations.

Education

Doctor of Philosophy	Physics, The University of Tokyo Prof. M. Tokunaga group	2018
Master of Science	Physics, The University of Tokyo Prof. M. Tokunaga group	2015
Bachelor of Science	Physics, Nagoya University Condensed-matter theory group	2013

Research Experience

Assistant Professor	Okayama University	2018.4-2024.9
Associate Professor	Iwate University	2024.10-

Recent Research Topics

Correlation between superconductivity and charge density wave in $LaAgSb_2$

- K. Akiba *et al.*, Phys. Rev. B **106**, L161113 (2022).
- K. Akiba and T. C. Kobayashi, Phys. Rev. B **107**, 245117 (2023).

Fermiology of $LaAgSb_2$ under high pressure by angle-resolved magneto-transport

- K. Akiba *et al.*, Phys. Rev. B **103**, 085134 (2021).
- K. Akiba *et al.*, Phys. Rev. B **105**, 035108 (2022).

Anomalous Hall effect induced by Berry curvature in pressurized α-Mn

- K. Akiba *et al.*, Phys. Rev. Research **2**, 043090 (2020).

Publications

Researchmap

Google Scholar

Skills

High magnetic field

- Non-destructive pulsed magnet (max. 75 T)
- Superconducting magnet (max. 18 T)

High pressure

- Piston-cylinder cell (max. 3 GPa)
- Indenter-type cell (max. 5 GPa)
- Opposed-anvil-type cell (max. 10 GPa)
- Diamond anvil cell (above 10 GPa)

Low temperature

- ^{3}He/^{4}He dilution refrigerator (min. 50 mK)

High precision measurements under extreme conditions

- Electrical resistivity
- Magnetization
- Specific heat
- Field-angular-resolved measurements using mechanical rotator

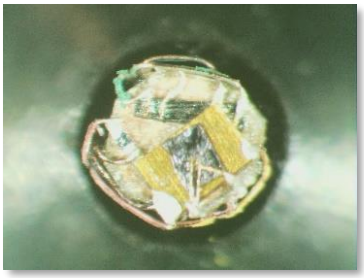
Single crystal growth

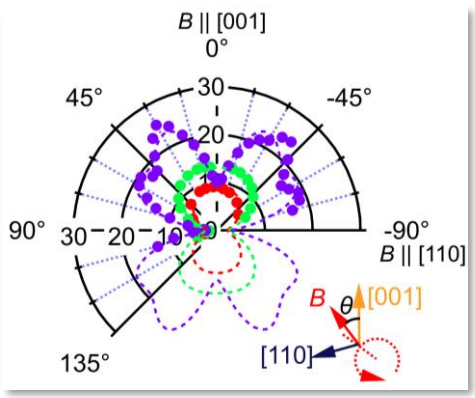
- Flux method

First-principles calculation

- Quantum ESPRESSO
- WannierTools

Gallery




B || [001]
0°
45°
-45°
30
20
10
0
90°
-90°
B || [110]
135°
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θ
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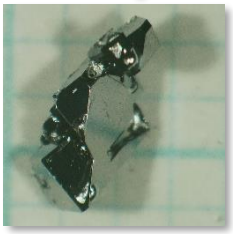
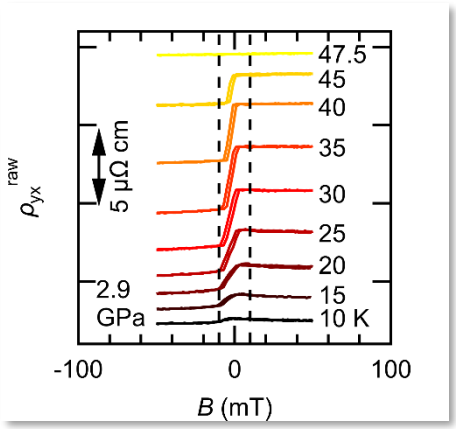
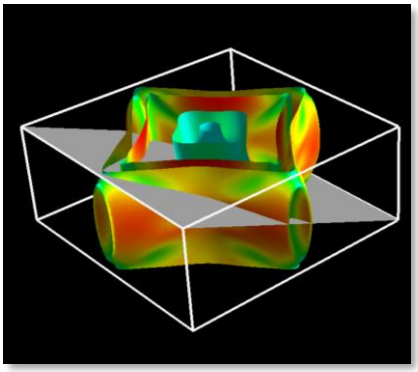
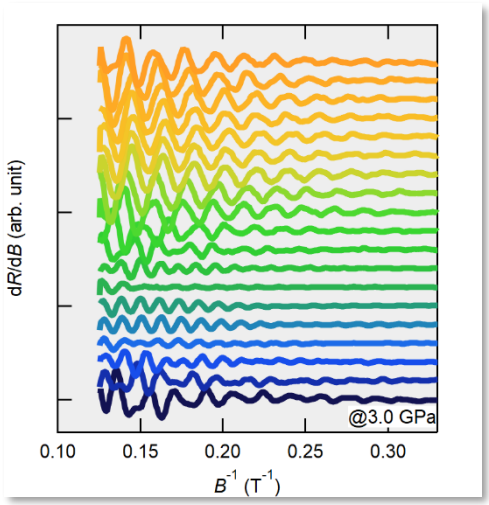
[110]




47.5
45
40
35
30
25
20
15
10 K
5 μΩ cm
ρ_{yx}^{raw}
2.9
GPa
-100
0
100
B (mT)




dR/dB (arb. unit)
@3.0 GPa
0.10
0.15
0.20
0.25
0.30
B^{-1} (T^{-1})