

Peer-Reviewed Papers

- (1) Abrupt change in electronic states under pressure in new compound EuPt_3Al_5 ,
T. Koizumi, F. Honda, Y. Sato, D. Li, D. Aoki, Y. Haga, J. Gochi, S. Nagasaki, Y. Uwatoko, Y. Kaneko,
and Y. Onuki,
Journal of the Physical Society of Japan 91, 043704_1-043704_5 (2022).
- (2) Gaps in Topological Magnon Spectra: Intrinsic versus Extrinsic Effects,
S.-H. Do, J. A. M. Paddison, G. Sala, T. J. Williams, K. Kaneko, K. Kuwahara, A. F. May, J. Yan,
M. A. McGuire, M. B. Stone, M. D. Lumsden, and A. D. Christianson,
Phys. Rev. B 106, L060408 (2022).
- (3) Drastic change in magnetic anisotropy of UTe_2 under pressure revealed by ^{125}Te -NMR,
K. Kinjo, H. Fujibayashi, G. Nakamine, S. Kitagawa, K. Ishida, Y. Tokunaga, H. Sakai, S. Kambe,
A. Nakamura, Y. Shimizu, Y. Homma, D. Li, F. Honda, and D. Aoki,
Physical Review B 105, L140502_1-L140502_5 (2022).
- (4) Effect of uranium deficiency on normal and superconducting properties in unconventional
superconductor UTe_2 ,
Y. Haga, P. Opletal, Y. Tokiwa, E. Yamamoto, Y. Tokunaga, S. Kambe, and H. Sakai,
Journal of Physics; Condensed Matter 34, 175601_1-175601_7 (2022).
- (5) Enhanced Spin-Orbit Coupling in a Correlated Metal,
K. Kubo,
Journal of the Physical Society of Japan 91, 124707_1-124707_7 (2022).
- (6) Ferromagnetic crossover within the ferromagnetic order of U_7Te_{12} ,
P. Opletal, H. Sakai, Y. Haga, Y. Tokiwa, E. Yamamoto, S. Kambe, and Y. Tokunaga,
Journal of the Physical Society of Japan 92, 034704_1-034704_5 (2023).
- (7) First observation of the de Haas-van Alphen effect and Fermi surfaces in the unconventional
superconductor UTe_2 ,
D. Aoki, H. Sakai, P. Opletal, Y. Tokiwa, J. Ishizuka, Y. Yanase, H. Harima, A. Nakamura, D. Li, Y.
Homma, Y. Shimizu, G. Knebel, J. Flouquet, and Y. Haga,
Journal of the Physical Society of Japan 91, 083704_1-083704_5 (2022).
- (8) Homogeneity of $(\text{U}, \text{M})\text{O}_2$ ($M = \text{Th}, \text{Np}$) prepared by supercritical hydrothermal synthesis,
K. Shirasaki, C. Tabata, A. Sunaga, H. Sakai, D. Li, M. Konaka, and T. Yamamura,
Journal of Nuclear Materials 563, 153608_1-153608_11 (2022).
- (9) Magnetic properties of single crystalline Tb_5Sb_3 , A. Kitaori, N. Kanazawa, T. Kida, Y. Narumi, M.
Hagiwara, K. Kindo, T. Takeuchi, A. Nakamura, D. Aoki, Y. Haga, Y. Kaneko, Y. Tokura, and Y.
Onuki,
Journal of the Physical Society of Japan 92, 024702_1-024702_6 (2023).
- (10) Multipole polaron in the devil's staircase of CeSb ,
Y. Arai, K. Kuroda, T. Nomoto, Z. H. Tin, S. Sakuragi, C. Bareille, S. Akebi, K. Kurokawa, Y.
Kinoshita, W.-L. Zhang, S. Shin, M. Tokunaga, H. Kitazawa, Y. Haga, H. Suzuki, S. Miyasaka, S.

- Tajima, K. Iwasa, R. Arita, and T. Kondo,
Nature Materials 21, 410-415 (2022).
- (11) Nested antiferromagnetic spin fluctuations and non-Fermi-liquid behavior in electron-doped CeCo_{1-x}Ni_xIn₅,
H. Sakai, Y. Tokunaga, S. Kambe, J.-X. Zhu, F. Ronning, J. D. Thompson, H. Kotegawa, H. Tou, K. Suzuki, Y. Oshima, and M. Yokoyama,
Physical Review B 106, 235152_1-235152_8 (2022).
- (12) Precise magnetization measurements down to 500 mK using a miniature ³He cryostat and a closed-cycle ³He gas handling system installed in a SQUID magnetometer without continuous-cooling functionality,
K. Shimamura, H. Wajima, H. Makino, S. Abe, Y. Haga, Y. Sato, T. Kawae, and Y. Yoshida,
Japanese Journal of Applied Physics 61, 056502_1-056502_7 (2022).
- (13) Single crystal growth and magnetic properties of alpha-Mn and beta-Mn,
Y. Onuki, D. Aoki, A. Nakamura, T. Matsuda, M. Nakashima, Y. Haga, and T. Takeuchi,
Journal of the Physical Society of Japan 91, 065001_1-065001_2 (2022).
- (14) Single crystal growth and magnetic properties of noncentrosymmetric antiferromagnet Mn₃IrSi,
Y. Onuki, Y. Kaneko, D. Aoki, A. Nakamura, T. Matsuda, M. Nakashima, Y. Haga, and T. Takeuchi,
Journal of the Physical Society of Japan 91, 065002_1-065002_2 (2022).
- (15) Single crystal growth of superconducting UTe₂ by molten salt flux method,
H. Sakai, P. Opletal, Y. Tokiwa, E. Yamamoto, Y. Tokunaga, S. Kambe, and Y. Haga,
Physical Review Materials, 6, 073401_1-073401_10 (2022).
- (16) Split Fermi surface properties of noncentrosymmetric compounds Fe₂P, Ni₂P, and Pd₂Si,
Y. Onuki, A. Nakamura, D. Aoki, T. Matsuda, Y. Haga, H. Harima, T. Takeuchi, and Y. Kaneko,
Journal of the Physical Society of Japan 91, 064712_1-064712_10 (2022).
- (17) Structural 130 K phase transition and emergence of a two-ion Kondo state in Ce₂Rh₂Ga explored by ^{69,71}Ga nuclear quadrupole resonance,
S. Yamamoto, T. Fujii, S. Luther, H. Yasuoka, H. Sakai, F. Bartl, K. M. Ranjith, H. Rosner, J. Wosnitza, A. M. Strydom, H. Kuhne, and M. Baenitz,
Physical Review B 106, 115125_1-115125_5 (2022).
- (18) Unconventional superconductivity in UTe₂,
D. Aoki, J.-P. Brison, J. Flouquet, K. Ishida, G. Knebel, Y. Tokunaga, and Y. Yanase,
Journal of Physics; Condensed Matter 34, 243002_1-243002_41 (2022).
- (19) Electronic structure of ThPd₂Al₃; Impact of the U 5*f* states on the electronic structure of UPd₂Al₃,
S. Fujimori, Y. Takeda, H. Yamagami, J. Pospisil, E. Yamamoto, and Y. Haga,
Physical Review B 105, 115128_1-115128_6 (2022).
- (20) Influence of additives on low-temperature hydrothermal synthesis of UO_{2+x} and ThO₂,
C. Tabata, K. Shirasaki, H. Sakai, A. Sunaga, D. Li, M. Konaka, and T. Yamamura,
Cryst. Eng. Comm 24, 3637 (2022)

- (21) Change of superconducting character in UTe_2 induced by magnetic field,
K. Kinjo, H. Fujibayashi, S. Kitagawa, K. Ishida, Y. Tokunaga, H. Sakai, S. Kambe, A. Nakamura,
Y. Shimizu, Y. Homma, D. X. Li, F. Honda, D. Aoki, K. Hiraki, M. Kimata, and T. Sasaki
Phys. Rev. B 107, L060502_1- L060502_5 (2023).

Invited Talks at International Conferences

- (1) Impact of defects on the physical properties of heavy fermion superconductor UTe_2 ,
Y. Haga,
International Workshop on the Dual Nature of f-Electrons, Dresden, Germany (June 21-24, 2022).
- (2) Symmetry of Hidden Ordering and Superconductivity in URu_2Si_2 ,
S. Kambe,
2022 MRS Spring meeting, Honolulu, USA (May 8-13, 2022).
- (3) Single crystal growth and $H-T$ phase diagram of spin-triplet superconducting UTe_2 ,
H. Sakai,
GIMRT, REIMEI and IRN Joint International Workshop on Superconductivity, Structural Complexity and Topology of UTe_2 and Aperiodic Crystals, Sendai, Japan (Nov. 30-Dec. 2).

Books and Scientific Articles

- (1) An Answer after 50 Years,
Y. Tokunaga,
JPSJ News and Comments (Internet) 19, 20_1-20_2 (2022).

Awards

- (1) Physical Review B Editors suggestion,
Drastic change in magnetic anisotropy of UTe_2 under pressure revealed by ^{125}Te -NMR,
K. Kinjo, H. Fujibayashi, G. Nakamine, S. Kitagawa, K. Ishida, Y. Tokunaga, H. Sakai, S. Kambe,
A. Nakamura, Y. Shimizu, Y. Homma, D. Li, F. Honda, and D. Aoki,
April, 6, 2022
- (2) 2022 先端基礎研究センター センター長賞, 2022 ASRC Director Awards.
ウランジテルル化物超伝導体の純良単結晶育成法の開発 Development of a method for growing
high quality single crystal of the superconducting uranium ditelluride,
H. Sakai

Press Release

- (1) 身近な塩で超純良ウラン超伝導物質の育成に成功！一次世代量子コンピューターへの応用に
期待— Success in growing high-purity uranium superconductors with familiar salt! – Hopes for
potential application to next-generation quantum computers-
H. Sakai