

GIMRT, REIMEI and IRN Aperiodic joint international workshop

## Superconductivity, Structural Complexity and Topology of $UTe_2$ and Aperiodic Crystals

From 30<sup>th</sup> November to 2<sup>nd</sup> December Sendai, Japan

### 30 November 2022

chair: Tokunaga

08:50-09:00 Opening

09:00-09:30 Priscila Rosa (Los Alamos National Laboratory)

*Puzzling over the superconducting order parameter of  $UTe_2$*

09:30-10:00 Hironori Sakai (Japan Atomic Energy Agency)

*Single crystal growth and H-T phase diagram of spin-triplet superconducting  $UTe_2$*

10:00-10:30 Sean Thomas (Los Alamos National Laboratory)

*Sample inhomogeneity and uniaxial stress in  $UTe_2$*

10:30-11:00 Break

chair: Kimata

11:00-11:30 William Knafo (LNCMI, CNRS)

*Anisotropic signatures of the electronic correlations in the electrical resistivity of  $UTe_2$*

11:30-12:00 Shin-ichi Fujimori (Japan Atomic Energy Agency)

*Photoemission study of  $UTe_2$*

12:00-12:30 Dai Aoki (Tohoku University)

*Fermi surface properties in  $UTe_2$*

12:30-14:00 Lunch and Poster

chair: de Boissieu

14:00-14:30 Kazuhiko Deguchi (Nagoya University)

*Superconductivity of icosahedral approximants with Tsai-type clusters*

14:30-15:00 Akira Sekiyama (Osaka University)

*Core-level and valence-band photoemission study of rare-earth-based quasicrystal approximants*

15:00-15:30 Nayuta Takemori (Osaka University)

*Bogoliubov-de Gennes and DMFT study of superconducting hypermaterials*

15:30-16:00 Break

chair: Takemori

16:00-16:30 Marc de Boissieu (Univ Grenoble Alpes, CNRS, SIMaP)

*IRN network presentation*

16:30-17:00 Nobuhisa Fujita (Tohoku University)

*A comparative study of electronic eigenstates in rhombic decagonal tilings with different long-range characteristics: The emergence of pseudo-localized states in non-Penrose type systems*

17:00-17:30 Klaus-Wilhelm Hasselbach (Institute Neel CNRS UGA)  
*Chiral superconductivity in  $UPt_3$*

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chair: Kambe

09:00-09:30 Jean-Pascal Brison (Univ.Grenoble Alpes, CEA)  
*Field-induced superconducting phases in  $UTe_2$*

09:30-10:00 Atsushi Miyake (The University of Tokyo)  
*Magnetic-field effect on  $UTe_2$  and aperiodic crystals*

10:00-10:30 Michal Vališka (Charles University)  
*High-field study of  $UTe_2$*

10:30-11:00 Break

chair: Izawa

11:00-11:30 Yusei Shimizu (Tohoku University)  
*High-resolution magnetization and magnetostriction measurements in  $UTe_2$*

11:30-12:00 Kota Ishihara (The University of Tokyo)  
*Superconducting gap structure and chiral superconductivity in  $UTe_2$*

12:00-12:30 Tomoya Asaba (Kyoto University)  
*Topological properties of uranium-based compounds*

12:30-14:00 Lunch and Poster

chair: Aoki

14:00-14:30 Youichi Yanase (Kyoto University)  
*Nontrivial topology, symmetry breaking, and nonreciprocal responses in superconducting  $UTe_2$*

14:30-15:00 Kazushige Machida (Ritsumeikan University)  
*Theoretical studies of high field phase in  $UTe_2$ -Violation of orbital depairing limit in a triplet pairing-*

15:00-15:30 Satoshi Fujimoto (Osaka University)  
*Possible pairing states and topology of  $UTe_2$*

15:30-16:00 Break

chair: Svanidze

16:00-16:30 Yuichi Nemoto (Niigata University)  
*Observation of structural quantum criticality in iron-pnictide superconductor using ultrasound measurements*

16:30-17:00 Michito Suzuki (Tohoku University)  
*Partial spectrum descriptors of local magnetic environments (tentative)*

17:00-17:30 Anuradha Jagannathan (University of Paris-Saclay)  
*Edge and corner superconductivity in 2D models*

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chair: Yanase

09:00-09:30 Seunghyun Khim (Max Planck Institute for Chemical Physics of Solids)  
*Novel heavy-fermion superconductor CeRh<sub>2</sub>As<sub>2</sub>*

09:30-10:00 Shunsaku Kitagawa (Kyoto University)  
*NMR studies for multiple superconducting phase: UTe<sub>2</sub> and CeRh<sub>2</sub>As<sub>2</sub>*

10:00-10:30 Ilya Sheikin (LNCMI-Grenoble, CNRS)  
*What can we learn about UTe<sub>2</sub> from magnetic torque measurements? Comparison with CeRh<sub>2</sub>As<sub>2</sub>.*

10:30-11:00 Break

chair: Tamura

11:00-11:30 Ross Colman (Charles University)  
*Suppression of the Hebel-Slichter peak in highly expanded A<sub>3</sub>C<sub>60</sub> superconductors, probed by  $\mu$ SR spectroscopy*

11:30-12:00 Arianna Minelli (University of Oxford)  
*Charge density wave phase in KCP: a new look to an old compound*

12:00-12:30 Eteri Svanidze (Max Planck Institute for Chemical Physics of Solids)  
*Intrinsic properties of unconventional superconductors*

12:30-14:00 Lunch and Poster

chair: Haga

14:00-14:30 Tatsuya Yanagisawa (Hokkaido University)  
*A study of elastic properties of UTe<sub>2</sub> under high magnetic field*

14:30-15:00 Koichi Izawa (Osaka University)  
*Non-linear electrical transport in toroidal ordered metals*

15:00-15:30 Hisatomo Harima (Kobe University)  
*On electronic orders unaffacting crystal symmetry*

15:30-16:00 Concluding Remarks

Poster Session (12:30-14:00 from 30<sup>th</sup> November to 2<sup>nd</sup> December)

- P1 Yoshinori Haga (JAEA)  
*Upper critical field of high quality single crystal of  $UTe_2$*
- P2 Yoshifumi Tokiwa (JAEA)  
*Stabilization of superconductivity by metamagnetism in  $UTe_2$*
- P3 Petr Opletal (JAEA)  
Physical properties of single crystal of  $U_7Te_{12}$
- P4 Shiki Ogata (Kyoto University)  
*Microscopic study of the magnetism and superconductivity in the noncentrosymmetric heavy-fermion superconductor  $CeRh_2As_2$*
- P5 Shinsaku Kambe (JAEA)  
*Ru-NQR study under uni-axial stress in  $URu_2Si_2$*
- P6 Takafumi Kitazawa (Tohoku university)  
*Pulsed high field measurements in quasi-degenerate diluted Yb systems  $(Lu, Yb)Rh_2Zn_{20}$*
- P7 Ireneusz Buganski (AGH University of Science and Technology)  
*Equivalence of Tsai and Bergman clusters*
- P8 Farid Labib (Tokyo University of Science)  
*Superconductivity in icosahedral Au-Si-Yb 1/1 approximant crystal*
- P9 Motoi Kimata (Tohoku University)  
*Enhancement of Anomalous Hall effect at the vicinity of field re-entrant superconducting phase in  $UTe_2$*
- P10 Fuminori Honda (Kyushu University)  
*Pressure-induced structural transition and new superconducting phase in  $UTe_2$*
- P11 Ryuji Hakuno (Kyoto University)  
*Magnetism and superconductivity in mixed dimensional periodic Anderson model*