

J-Physics 2019 International Conference & KINKEN-WAKATE 2019 Multipole Physics

We organized the international workshop “KINKEN-WAKATE 2019 Multipole Physics” at Centennial Hall in Kobe University, as a joint workshop with J-Physics 2019 International conference from Sep 17 to Sep 21, 2019. Many researchers and students participated in this joint workshop, leading to fruitful discussion, future international collaboration, and encouragement for young researchers.

The purpose of this joint workshop with J-Physics2019 is the exchange and discussion on the recent experimental and theoretical achievements related to the multipole physics. The topics includes multipole order, quantum phase transition and criticality, unconventional superconductivity, parity mixing and the novel quantum phenomena, dynamical response by augmented multipole, development of new materials based on the strong spin-orbit coupling. In the first two days, KINKEN-WAKATE 2019 was held as a tutorial session, where 5 distinguished lecturers gave their lectures mainly for young researchers and students. The topics covers spin-triplet superconductivity, topological insulator/superconductor, augmented multipole, high field experiment, Ab initio calculation. We also had short oral presentations by students who have their posters. After KINKEN-WAKATE 2019, we had J-Physics 2019 international conference, where 34 invited talks, 14 contributed talks were given for four days. The sessions consisted of several topics related to multipole physics, namely “EuPtSi, Skyrmion, Yb-system”, “1-2-20 system”, “Solid state chemistry and new materials”, “Augmented multipole”, “Magnetic multipole”, “Novel superconductor UTe₂”, “Exotic superconductivity” and “Miscellaneous interesting topics”. The details are shown in the following program.

In poster sessions, we had 92 poster presentations for two days. To encourage young researchers, 8 posters were selected as “Best Poster Awards”. There were 155 participants including 18 from abroad, France, Germany, The Netherlands, USA, China, Korea, Croatia. The proceedings of J-Physics 2019 has been published in JPS Conference Proceedings Vol.29 in 2020.

I would like thank all participants, local staffs, members of local committee, program committee, publication committee on behalf of the organizing committee. I acknowledge also the financial support and suggestions by ICC-IMR.

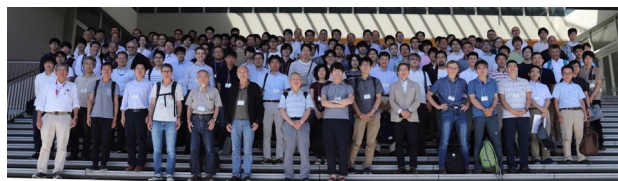


Fig. 1 Photograph of J-Physics 2019 International Conference & KINKEN-WAKATE 2019 Multipole Physics

Keywords: multipole, magnetism, superconductivity
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Table I: Program for "KINKEN-WAKATE 2019 Multipole Physics" and "J-Physics 2019"

	J-Physics 2019 International Conference & KINKEN-WAKATE 2019 Multipole Physics	 
	KINKEN-WAKATE 2019 Tutorial Session : Sep. 17, 13:00 – Sep. 18, 11:15 J-Physics 2019 International Conference : Sep. 18, 13:00 – Sep. 21, 12:30 Centennial Hall (Rokko Hall), Kobe University (Rokkodai 1-1, Nada-ku, Kobe 657-8501 Japan)	
Sep 17 (Tue)		
KINKEN-WAKATE Opening		
13:00 – 13:05		Opening remarks
Tutorial Session		
13:05 – 14:05	Jean-Pascal Brison <i>Univ. Grenoble Alpes, CEA, Phelq</i>	p-wave superconductivity in uranium based systems
14:15 – 15:15	Anne de Visser <i>University of Amsterdam</i>	Topological insulators and superconductors
15:25 – 16:25	Satoru Hayami <i>Hokkaido University</i>	Augmented multipoles and cross-correlated couplings
Sep 18 (Wed)		
9:00 – 10:00	Ilya Sheikin <i>LNCMI, CNRS</i>	Experimental techniques in high magnetic field
10:15 – 11:15	Harald O. Jeschke <i>Okayama University</i>	Ab initio calculations for strongly correlated electron systems
J-Physics 2019 Opening		
13:00 – 13:10		Opening remarks
EuPtSi, Skyrmion, Yb-system		
13:10 – 13:40	Catherine Pappas <i>Delft University of Technology</i>	Novel low temperature spiral and skyrmionic states
13:40 – 14:00	Yoshichika Onuki <i>University of the Ryukyus</i>	Single crystal growth and unique electronic states of cubic chiral EuPtSi and related compounds
14:00 – 14:20	Koji Kaneko <i>Japan Atomic Energy Agency</i>	Skyrmion lattice in f-electron magnet EuPtSi: neutron scattering study
14:20 – 14:40	Chihiro Tabata <i>Kyoto University</i>	Resonant X-ray scattering study of magnetic order in chiral antiferromagnet EuPtSi
14:40 – 14:55	Shigeo Ohara <i>Nagoya Institute of Technology</i>	Magnetotransport properties of heavy-fermion and chiral magnet YbNi ₃ Al ₉
14:55 – 15:15	Takeshi Matsumura <i>Hiroshima University</i>	Chiral soliton lattice formation in Yb(Ni _{1-x} Cu _x) ₃ Al ₉
1-2-20 System		
15:45 – 16:15	Sung Bin Lee <i>KAIST</i>	Field effect of multipolar order and superconductivity
16:15 – 16:45	Atsushi Tsuruta <i>Osaka Univ.</i>	Non-Fermi liquid behaviors in two-channel Anderson impurities and lattice model
16:45 – 17:05	Yu Yamane <i>Hiroshima University</i>	Non-fermi liquid behaviors in diluted 4f ^z systems Y(Pr)T ₂ Zn ₂₀ (T = Ir and Co)
17:05 – 17:25	Tatsuya Yanagisawa <i>Hokkaido University</i>	Logarithmic elastic response in the dilute non-Kramers system Y _{1-x} Pr _x Ir ₂ Zn ₂₀
Sep 19 (Thu)		

Solid State Chemistry and New Materials

9:00 – 9:30	Yanpeng Qi <i>School of Physical Science and Technology, ShanghaiTech University</i>	Pressure-induced superconductivity and topological quantum phase transitions in topological materials
9:30 – 9:50	Yoshihiko Okamoto <i>Nagoya University</i>	Superconductivity in PtSbS with noncentrosymmetric and cubic crystal structure
9:50 – 10:10	Hiroyuki Yoshida <i>Hokkaido University</i>	Application of hydrothermal technique to develop 3d transition metal compounds without local inversion symmetry
10:10 – 10:25	Kosmas Prassides <i>Osaka Prefecture University</i>	Emergent electronic phenomena in hybrid f-/p-electron molecular materials

Augmented Multipole I

10:55 – 11:15	Satoru Hayami <i>Hokkaido University</i>	Momentum-dependent spin splitting by collinear antiferromagnets without atomic spin-orbit coupling
11:15 – 11:35	Tomoya Higo <i>ISSP, University of Tokyo</i>	Large spontaneous responses induced by ferroic order of cluster magnetic octupoles in Mn ₃ Sn
11:35 – 11:55	Yuki Yanagi <i>Institute for Materials Research, Tohoku University</i>	Spontaneous inversion symmetry breaking by electric toroidal quadrupole ordering in Cd ₂ Re ₂ O ₇
11:55 – 12:10	Masashi Takigawa <i>ISSP, University of Tokyo</i>	Noncentrosymmetric phases in the spin-orbit coupled metal Cd ₂ Re ₂ O ₇ : Cd-NMR
12:10 – 12:25	Changle Liu <i>Fudan University</i>	Detecting hidden order in frustrated magnets

Miscellaneous Interesting Topics

13:30 – 14:00	Toni Helm <i>Helmholtz-Zentrum Dresden-Rossendorf</i>	Pulsed magnetic field, high pressure and FIB microstructures - a powerful combination for studies of unconventional metals
14:00 – 14:30	Yejun Feng <i>Okinawa Institute of Science and Technology Graduate University</i>	Direct observation of continuous all-in-all-out quantum phase transition under pressure
14:30 – 14:50	Noriaki Kimura <i>Tohoku University</i>	Orbital crossing and magnetic breakdown in noncentrosymmetric metals
14:50 – 15:10	Ryuji Higashinaka <i>Tokyo Metropolitan University</i>	Unconventional strongly correlated electronic states induced by multiple degrees of freedom in cubic Sm compounds
15:10 – 15:25	Ryousuke Shiina <i>University of Ryukyus</i>	Theory of valence fluctuation and magnetic ordering in nearly trivalent Eu compounds

Sep 20 (Fri)**UTe₂ I**

9:00 – 9:30	Sheng Ran <i>University of Maryland & NIST</i>	Unusual superconducting state in nearly ferromagnetic compound UTe ₂
9:30 – 10:00	Georg Knebel <i>Univ. Grenoble Alpes and CEA Grenoble</i>	Field enhancement of superconductivity close to the metamagnetic transition in UTe ₂
10:00 – 10:20	Kenji Ishida <i>Kyoto University</i>	NMR studies on U-based superconductors

UTe₂ II

10:50 – 11:10	Atsushi Miyake <i>ISSP, The University of Tokyo</i>	Metamagnetism in heavy fermion superconductors UTe ₂
11:10 – 11:25	Daniel Braithwaite <i>Univ. Grenoble Alpes and CEA Grenoble</i>	The nearly ferromagnetic superconductor UTe ₂ under pressure

11:25 – 11:40	William Knafo <i>LNCMI/CNRS, Toulouse, France</i>	Investigation of metamagnetism and reentrant superconductivity in UTe_2 by resistivity under intense pulsed magnetic field
11:40 – 11:55	Jun Ishizuka <i>Kyoto University</i>	Insulator-metal transition and odd-parity topological superconductivity in UTe_2
11:55 – 12:10	Suguru Hosoi <i>Osaka University</i>	Thermal conductivity measurements of the UTe_2 superconductor

Exotic Superconductivity I

13:10 – 13:40	Clifford W. Hicks <i>Max Planck Institute for Chemical Physics of Solids</i>	An evaluation of chiral superconductivity in Sr_2RuO_4
13:40 – 14:05	Shunichiro Kittaka <i>ISSP, University of Tokyo</i>	Thermodynamic study of the superconducting gap structure of Sr_2RuO_4
14:05 – 14:30	Shingo Yonezawa <i>Graduate School of Science, Kyoto University</i>	Probing and tuning of nematic superconductivity in doped Bi_2Se_3 superconductors

Augmented Multipole II

14:40 – 15:10	Di Xiao <i>Carnegie Mellon University</i>	Theory of magnetoelectric multipoles and its application in transport and optical effects
15:10 – 15:30	Motoi Kimata <i>Institute for Materials Research, Tohoku University</i>	Magnetic spin Hall effects in a non-collinear antiferromagnet
15:30 – 15:45	Shinji Watanabe <i>Kyushu Institute of Technology</i>	Charge transfer effect under odd-parity crystalline electric field: divergence of magnetic toroidal fluctuation in β - $YbAlB_4$

Sep 21 (Sat)

Magnetic Multipoles

9:00 – 9:20	Gaku Motoyama <i>Shimane University</i>	Magnetoelectric effect in antiferromagnetic ordered state of Ce_3TiBi_5 with Ce zig-zag chains
9:20 – 9:40	Akinari Koriki <i>Hokkaido University</i>	Observation of magnetoelectric effect in antiferromagnetic metal $CeRu_2Al_{10}$
9:40 – 10:00	Yuki Shiomi <i>University of Tokyo</i>	Observation of a magnetopiezoelectric effect in the antiferromagnetic metal $EuMnBi_2$
10:00 – 10:20	Kenya Ohgushi <i>Tohoku University</i>	Ferroic order of magnetic quadrupoles in $BaMn_2As_2$
10:20 – 10:40	Hikaru Watanabe <i>Department of Physics, Kyoto University</i>	Classification of multipole order: candidates and application to emergent responses

Exotic Superconductivity II and More

11:10 – 11:25	Shintaro Hoshino <i>Saitama University</i>	Unconventional full-gap superconductivity in Kondo lattice with semi-metallic conduction bands
11:25 – 11:40	Kazumasa Miyake <i>Osaka University, Center for Advanced High Magnetic Field Science</i>	Spin-orbit-phonon interaction as an origin of helical-symmetry breaking spin-triplet superconducting state
11:40 – 12:00	Alix McCollam <i>HFML-EMFL, Nijmegen</i>	Quantum oscillation studies of heavy fermion superconductors in high magnetic fields
12:00 – 12:20	Hilbert v. Löhneysen <i>Karlsruhe Institute of Technology</i>	Unusual two-band proximity-induced superconductivity in a simple metal: contribution of bulk and surface states in silver islands on (110)-oriented niobium