

# Scientific Program

Sunday, November 30

Arrival

18:00 – 20:00 Registration / Reception

Monday, December 1

**Opening 9:00 – 9:10**

**Session: THz emission I 9:10 – 10:50 (Chair: Lutfi Ozyuzer)**

9:10 – 9:35 **Reinhold Kleiner** 1  
*Hot spots and THz waves in  $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_8$  intrinsic Josephson junction stacks: Recent developments*

9:35 – 10:00 **Takanari Kashiwagi** 2  
*Development of THz imaging systems by using an IJJ emitter*

10:00 – 10:25 **Ulrich Welp** 3  
*Current filamentation in large  $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$  mesa devices observed via luminescent and scanning laser thermal microscopy*

10:25 – 10:50 **Yoshinori Uzawa** 4  
*Performance of terahertz superconducting receivers for the ALMA telescope*

Coffee break 10:50 – 11:10

**Session: Nanostructure/Josephson 11:10 – 12:25 (Chair: Shiro Kawabata)**

11:10 – 11:35 **Taro Yamashita** 5  
*Recent progress of superconducting nanowire single-photon detector and its applications*

11:35 – 12:00 **Shuichi Ooi** 6  
*Detection of vortex state in mesoscopic intrinsic Josephson junctions stacks*

12:00 – 12:25 **Steven Anlage** 7  
*Coherence and transparency in rf SQUID metamaterials*

Lunch 12:25 – 14:00

**Session: THz emission II 14:00 – 16:05 (Chair: Alexei Koshelev)**

14:00 – 14:25 **Huabing Wang** 8  
*Some efforts on improving performance and understanding mechanism of THz emission in intrinsic Josephson junctions*

14:25 – 14:50 **Manabu Tsujimoto** 9  
*Dynamic control of temperature distributions and terahertz waves in stacks of intrinsic Josephson junctions in  $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$*

14:50 – 15:15 **Hidetoshi Minami** 10  
*THz IJJ emitters operated at liquid nitrogen temperatures and 1.3 THz emission at 30 K*

15:15 – 15:40 **Akinobu Irie** 11  
*Fabrication and characterization of intrinsic Josephson junction THz oscillators*

15:40 – 16:05 **Takashi Tachiki** 12  
*Evaluation of cavity modes and radiation power of THz-wave oscillators using intrinsic Josephson junctions*

Tea break 16:05 – 16:30

**Session: Interface/topological materials 16:30 – 18:30 (Chair: Xiao Hu)**

16:30 – 16:55 **Alexander Buzdin** 13  
*Short vs long-ranged proximity effect in S/F/S Josephson junctions*

16:55 – 17:10 **Muhammad Anwar** 14  
*Development of ferromagnet  $\text{SrRuO}_3$  and spin triplet superconductor  $\text{Sr}_2\text{RuO}_4$  junctions*

17:10 – 17:25 **Hiroki Yamazaki** 15  
*Superconducting proximity effects in Nb/rare-earth bilayers*

17:25 – 17:50 **Hu-Jong Lee** 16  
*Josephson coupling via robust surface conducting layers in 3D topological insulators*

17:50 – 18:15 **Chih-Wei Luo** 17  
*THz emission and detection on surface carriers in topological insulators*

18:15 – 18:30 **Gaku Eguchi** 18  
*Ideal surface Dirac cone and its transport properties in the topological insulator TlBiSe<sub>2</sub>*

Light meal 18:30 – 19:00

**Session: Josephson junctions 19:00 – 20:30 (Chair: Vladimir Krasnov)**

19:00 – 19:25 **Paul Seidel** 19  
*Modeling different kinds of Josephson junctions and circuits for interpretation of their electrical characteristics*

19:25 – 19:50 **Yury Shukrinov** 20  
*Effects of coupling in intrinsic Josephson junctions under external electromagnetic radiation*

19:50 – 20:15 **Edward Goldobin** 21  
*Experiments with ferromagnetic  $\varphi$  Josephson junctions*

20:15 – 20:30 **Mohammad Kolahchi** 22  
*Resonance overlap as the origin of structured chaos in Josephson junctions*

Tuesday, December 2

**Session: THz emission III 9:00 – 10:40 (Chair: Kazuo Kadowaki)**

- 9:00 – 9:25 **Xiao Hu** 23  
*Josephson phenomena in novel superconducting states*
- 9:25 – 9:50 **Yukihiro Ota** 24  
*Numerical simulations of terahertz emission from intrinsic Josephson junctions with variation of the number of junctions*
- 9:50 – 10:15 **Alexei Koshelev** 25  
*Role of dissipation, disorder, and thermal noise in synchronization of intrinsic Josephson junctions*
- 10:15 – 10:40 **Richard Klemm** 26  
*Emission distributivities from novel geometrical antennas*
- Coffee break 10:40 – 11:10

**Session: Intrinsic Josephson junction I 11:00 – 12:35 (Chair: Reinhold Kleiner)**

- 11:00 – 11:25 **Phillip Moll** 27  
*Intrinsic Josephson junctions in the iron-based multi-band superconductor  $(V_2Sr_4O_6)Fe_2As_2$*
- 11:25 – 11:50 **Paul Müller** 28  
*Doping of high- $T_c$  superconductors by carrier injection*
- 11:50 – 12:05 **Yoshihiko Takano** 29  
*New  $BiS_2$ -based superconductors*
- 12:05 – 12:20 **Masanori Nagao** 30  
*Growth and  $c$ -axis transport property of  $PrO(F)BiS_2$  single crystal*
- 12:20 – 12:35 **Sachio Komori** 31  
*Underdamped intrinsic Josephson junctions in  $Pb_{1-y}Sr_2Y_{1-x}Ca_xCu_{2+y}O_{7+\delta}$  epitaxial films*
- Excursion 13:00 – 18:00

**Poser session 18:30 – 20:30**

Wednesday, December 3

**Session: Metamaterials 9:00 – 10:30 (Chair: Steven Anlage)**

- 9:00 – 9:25     **Alexey Ustinov**     32  
*Superconducting metamaterials*
- 9:25 – 9:50     **Hidehiro Asai**     33  
*Peculiar electromagnetic response of quantum metamaterial composed of Superconducting qubits*
- 9:50 – 10:15   **Iwao Kawayama**     34  
*Nonlinear responses of superconducting thin films induced by intense terahertz pulses*
- 10:15 – 10:30   **Fedor Kusmartsev**   35  
*Topological fractal metamaterials composed of electrically isolated Pi-rings for THz-radiation devices*
- Coffee break   10:30 – 10:50

**Session: Nanostructure/detector 10:50 – 12:20 (Chair: Paul Seidel)**

- 10:50 – 11:15   **Francesco Tafuri**     36  
*Nano domain encoding in transport properties of unconventional Josephson junctions and nanostructures*
- 11:15 – 11:40   **Takekazu Ishida**     37  
*Novel current-biased kinetic inductance detectors aiming at neutron radiography*
- 11:40 – 12:05   **Jian Chen**     38  
*Terahertz detectors working at room temperature*
- 12:05 – 12:20   **Masaru Kato**     39  
*Modified molecular-dynamics method for vortex dynamics in nano-structured superconductors*
- Lunch     12:20 – 14:00

**Session: Intrinsic Josephson junction II 14:00 – 15:35 (Chair: Hu-Jong Lee)**

- 14:00 – 14:25 **Vladimir Krasnov** 40  
*Generation-detection of nonequilibrium bosons using Bi-2212 intrinsic Josephson junctions: A hint about the pairing mechanism*
- 14:25 – 14:50 **Yannis Laplace** 41  
*Controlling high- $T_c$  Josephson plasmonics with strong THz fields and optical cavities*
- 14:50 – 15:05 **Haruhisa Kitano** 42  
*Possibility of macroscopic quantum tunneling in higher order switching events of  $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_8$  intrinsic Josephson junctions*
- 15:05 – 15:20 **Hitoshi Kambara** 43  
*Switching characteristics of BSCCO intrinsic Josephson junction on a cross-type device: A systematic study by sequential doping*
- 15:20 – 15:35 **Yilmaz Simsek** 44  
*Current injection into hole and electron doped high- $T_c$  superconductors*
- Tea break 15:35 – 15:55

**Session: THz emission IV 15:55 – 17:30 (Chair: Ulrich Welp)**

- 15:55 – 16:20 **Lutifi Ozyuzer** 45  
*Area dependence of Josephson critical current density in superconducting  $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$  mesa structures for terahertz emission*
- 16:20 – 16:45 **Kensuke Nakajima** 46  
*Successful terahertz emission from monolithic Bi-2212 intrinsic Josephson junctions near 77K*
- 16:45 – 17:00 **Tsuyoshi Tamegai** 47  
*Thermal imaging of Bi2212 mesas*
- 17:00 – 17:15 **Chiharu Watanabe** 48  
*The effect of temperature distribution on THz emission from high- $T_c$  superconducting THz devices*
- 17:15 – 17:30 **Min Ji** 49  
*Terahertz radiation above 1 THz from intrinsic Josephson junction arrays*

**Closing 17:30 – 17:40**