

PRISM2022 Scientific Program

(Pacific Rim International Conference on Superconducting Materials :
Fundamentals and Applications)

22nd - 23rd September, 2022

*ACCMS Global Research Centre, SRM Institute of Science and Technology,
Chennai, India*

and

New Industry Creation Hatchery Center, Tohoku University, Sendai, Japan

Overview Talk 60 min, including discussion

Keynote Talk 60 min, including discussion

Invited Talk 30 min, including discussion

22nd September, 2022(Thursday)

(Opening time: 10:00 Japan, 9:00 China, 6:30 India, 2:00 London, 21:00[21st night] Washington)

10:00-10:20 Opening Remark: Yoshiyuki Kawazoe.

9:00 China, 6:30 India, 2:00 London, 21 : 00(21st night) Washington

Announcement; Surya Yuvaraj

Session I: 10:20-11:20 History of High-Tc Superconductor

Chair: John Boeckl

10:20-11:20 (Overview) **“Superconductivity: One Hundred Years to Reach Room Temperature”**

Warren Pickett

University of California Davis

Session II: 11:20-13:20 High Tc Superconductors

Chair: Xiao Hu

11:20-11:50 (Invited-1) **“Nanofabricated High Transition Temperature Superconductor Josephson Junctions”**

Shane A. Cybart

*Department of Electrical and Computer Engineering, University of California
Riverside*

11:50-12:20 (Invited-2)

“Enhanced Electrophoretically Deposited $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_8$ Films via Particle Size Optimization”

Maricar M. Rosete

*Department of Mining, Metallurgical and Materials Engineering
University of the Philippines Diliman*

12:20-12:50 (Invited-3)

“SUPERCONDUCTIVITY AND GRAIN COUPLING BEHAVIOUR OF $\text{Bi}_2\text{Sr}_{2-x}\text{In}_x\text{CaCu}_2\text{O}_{8-\delta}$ (In-DOPED Bi-2212) BULKS AND FILMS

Francesca Isabel N. de Vera^{1,2*}, Bess G. Singidas² and Roland V. Sarmago

¹*Institute of Mathematical Sciences and Physics, University of the
Philippines – Los Banos Laguna,*

²*National Institute of Physics, University of the Philippines – Diliman*

12:50-13:20 (Invited-4)

“Molecular dynamics simulations of radiation damage in $\text{YBa}_2\text{Cu}_3\text{O}_7$ ”

R. Gray¹, M. J. D. Rushton² and S. T. Murphy^{1*}

¹*Engineering Department, Lancaster University, Bailrigg, Lancaster, LA1
4YW, UK*

²*Nuclear Futures Institute, Bangor University, Bangor, Gwynedd LL57 2DG,
UK*

13:20-13:50 (Invited-20)

“Superconductivity in Infinite Layer Nickelates”

Lin Er Chow,¹ K. Y. Yip,² M. Pierre,³ S. W. Zeng,¹ Z. T. Zhang,¹ T. Heil,⁴ J. Deuschle,⁴ P. Nandi,¹ S. K. Sudheesh,¹ Z. S. Lim,¹ Z. Y. Luo,¹ M. Nardone,³ A. Zitouni,³ Peter A. van Aken,⁴ Elbert E.M. Chia,⁵ M. Goiran,³ S. K. Goh,² W. Escoffier,³ A. Ariando^{1*}

¹*Department of Physics, Faculty of Science, National University of Singapore,
Singapore 117551, Singapore*

²*Department of Physics, The Chinese University of Hong Kong, Shatin N.T.,
Hong Kong SAR, China*

³*LNCMI, Université de Toulouse, CNRS, INSA, UPS, EMFL, 31400 Toulouse,
France*

⁴*Max Planck Institute for Solid State Research, 70569 Stuttgart, Germany*

⁵*Division of Physics and Applied Physics, School of Physical and Mathematical Sciences, Nanyang Technological University, 21 Nanyang Link, Singapore 637371, Singapore*

13:50-14:20 Break

Session III: 14:20-17:20 Unconventional Superconductors

Chair: Zhengtao Xu

- 14:20-14:50 (Invited-5) **“Telltale Diamagnetism above 50 K of a Coordination Polymer System”**
Zhengtao Xu
Institute of Materials Research and Engineering, 2 Fusionopolis Way, Innovis Building, Singapore 138634
- 14:50-15:20 (Invited-6) **“Doping-induced polar-nonpolar structural phase transition and enhancement of superconductivity in platinum pnictides”**
Kazutaka Kudo
Department of Physics, Osaka University, Toyonaka, Osaka 560-0043, Japan
- 15:20-15:50 (Invited-7) **“Cooper approach to pair formation in a tight-binding model of La-based cuprate superconductors”**
K.M.Frahm¹, D.L.Shepelyansky^{2*}
¹*Laboratoire de Physique Theorique,*
²*CNRS, UPS, Toulouse, France*
- 15:50-16:20 (Invited-8) **“Electron-phonon interaction and superconductivity in twisted graphene layers”**
Hyoung Joon Choi
Department of Physics, Yonsei University, Seoul 03722, Korea
- 16:20-16:50 (Invited-9) **“Superconductivity emerging from a stripe charge order in IrTe₂ nanoflakes”**
Jun Sung Kim
Department of Physics, Pohang University of Science and Technology, Korea
- 16:50-17:20 (Invited-10) **“Inherited topological superconductivity in two-dimensional Dirac**

semimetal”

Hoi Chun Po

*Department of Physics, Hong Kong University of Science and Technology,
Clear Water Bay, 999077, Hong Kong, China*

17:20-17:30 Break

Session IV: 17:30-18:30 Heterostructures

Chair: Saeed Bahramy

17:30-18:00 (Invited-11) **“Superconductors in quantum computers and the various novel aspects of a new elemental superconductor”**

Bhupendra N. Dev

*Centre for Quantum Engineering, Research and Education (CQuERE)
TCG Centres for Research and Education in Science and Technology,
Kolkata 700091, India*

18:00-18:30 (Invited-12) **“Metal oxide-based organic-inorganic layered hybrids with electron-rich spacer molecules”**

Shen V. Chong*, J. L. Tallon

*Robinson Research Institute, School of Engineering, Victoria University of
Wellington, Wellington, New Zealand*

(Ending time: 18:30 Japan, 17:30 China, 15:00 India, 10:30 London, 5:30 Washington)

23rd September, 2022(Friday)

(Opening time: 10:00 Japan, 9:00 China, 6:30 India, 2:00 London, 21:00[21st night] Washington)

Session V: 10:00-12:30 Vortex, Topological Superconductors

Chair: Worawat Meevasana

- 10:00-11:00 (Keynote-1) **“Superconductivity in a quintuple-layer square-planar nickelate”**
Julia A. Mundy^{1*}, Grace A. Pan¹, Dan Ferenc Segedin¹, Harrison LaBollita²,
Qi Song², Berit H. Goodge^{3,4}, Lena F. Kourkoutis^{3,4}, Charles M. Brooks¹, Antia
S. Botana²
¹ *Department of Physics, Harvard University, Cambridge, MA*
² *Department of Physics, Arizona State University, Tempe, AZ*
³ *School of Applied and Engineering Physics, Cornell University, Ithaca, NY*
⁴ *Kavli Institute at Cornell for Nanoscale Science, Cornell University, Ithaca,
NY*
- 11:00-11:30 (Invited-13) **“Novel Superconductivity with 6-Electron Entanglement”**
Xiao Hu
Internat International Center for Materials Nanoarchitectonics (WPI-MANA)
National Institute for Materials Science (NIMS); Tsukuba 305-0044, Japan
- 11:30-12:00 (Invited-14) **“Surface atomic-layer superconductors: Josephson vortex and dynamic spin-momentum locking”**
Takashi Uchihashi
National Institute for Materials Science, Tsukuba, Ibaraki, Japan
- 12:00-12:30 (Invited-15) **“Spin Texture of Majorana Bound State in Topological Superconductors”**
Takuto Kawakami^{1*}, Xiao Hu²
¹ *Department of Physics, Osaka University,*
² *International Center for Materials Nanoarchitectonics (WPI-MANA),
National Institute for Materials Science (NIMS)*

Session VI: 12:30-13:30 New Structures

Chair: IoChun HOI

- 12:30-13:00 (Invited-16) **“Study of Second Generation HTS Tape Joint by Low Temperature**

Sintering of Nano-Silver Paste”

In-Gann Chen^{*}, Chi-Lei Chang, and Chia-Ming Yang

Department of Materials Science and Engineering, National Cheng-Kung University, Tainan 701, Taiwan;

13:00-13:30 (Invited-17) **“Superconductivity in Non-Centrosymmetric Superconductor, Re_6Zr ”**

Sangita Bose

School of Physical Sciences, UM-DAE Center for Excellence in Basic Sciences, University of Mumbai

13:30-14:00 Break

Session VII: 14:00-16:00 Applications-1

Chair: Charles Cerny

14:00-15:00 (Keynote-2) **“Progress of the Superconducting Maglev Chuo Shinkansen”**

Junichi Kitano

Central Japan Railway Company

15:00-15:30 (Invited-18) **“Deterministic loading of microwaves onto an artificial atom using a time reversed waveform”**

IoChun HOI

Department of Physics, City University of Hong Kong, Tat Chee Avenue, Kowloon, Hong Kong SAR, China

15:30-16:00 (Invited-19) **“Developing a scalable superconducting quantum computer and its control system”**

Yung Szen Yap^{1,2*}, Rainer Dumke^{2,3}

¹ *Faculty of Science and Centre for Sustainable Nanomaterials (CSNano), Universiti Teknologi Malaysia, 81310 UTM Johor Bahru, Johor, Malaysia*

² *Centre for Quantum Technologies, National University of Singapore, 3 Science Drive 2, Singapore 117543, Singapore*

³ *Division of Physics and Applied Physics, School of Physical and Mathematical Sciences, Nanyang Technological University, 21 Nanyang Link, Singapore 637371, Singapore*

16:00-16:10 Break

Session VIII: 16:10-19:10 Applications-2

Chair: Hyoung Joon Choi

16:10-17:10 (Keynote-3) **“Applications of Superconducting Materials in Disruptive Technologies”**

Charles Cerny

USAF Research Laboratory, USA

17:10-17:40 (Invited-21) **“Low-dimensional superconductivity driven by valance fluctuation in layered materials”**

Mohammad Saeed Bahramy

Department of Physics and Astronomy, The University of Manchester

17:40-18:10 (Invited-22) **“Interaction at the surface of SrTiO₃ and related superconducting phenomena”**

Worawat Meevasana

School of Physics, Suranaree University of Technology, Thailand

18:10-18:40 (Invited-23) **“Design, and build, of flux-pumped REBCO superconducting rotating machines”**

Rodney A Badcock^{1*}, James G Storey¹, Zhenan Jiang¹, Kent A Hamilton¹, Grant Lumsden¹, Swarn S Kalsi², Hubertus W. Weijers¹, Sangkwon Jeong³, Michael Gschwendtner⁴, Sarat Singamneni⁴, Alan Caughley⁵

¹*Paihau - Robinson Research Institute, Victoria University of Wellington, 76 Sydney Street, Lower Hutt, 5012, New Zealand*

²*Kalsi Green Power System LLC, Princeton, NJ, USA*

³*Department of Mechanical Engineering, Korea Advanced Institute of Science and Technology, 291 Daehak-ro, Yuseong-gu, Daejeon, 34141, Republic of Korea*

⁴*Mechanical Engineering, Auckland University of Technology, 34 St Paul Street, Auckland, 1010, New Zealand*

⁵*Callaghan Innovation, 5 Sheffield Crescent, Christchurch, 8053, New Zealand*

18:40-19:00

Closing Remarks : John Boeckl

(Ending time: 19:00 Japan, 18:00 China, 15:30 India, 11:00 London, Washington: 6:00)