

PECS-XIII in TOKYO

The 13th International Symposium on Photonic and Electromagnetic Crystal Structures

Session information

Keynote Session

Keynote Session

Wed. Mar 29, 2023 9:10 AM - 12:00 PM Kanda-Myoujin Hall (1F)

29-KN-01/29-KN-02: Satoshi Iwamoto (The University of Tokyo)

29-KN-03/29-KN-04: Thomas Krauss (University of York)

9:10 AM - 9:50 AM

[29-KN-01] The Challenge of Photonic Crystals (and Meta-Materials) is Inverse Electromagnetic Design (Aperiodic)

*Eli Yablonovitch Yablonovitch¹ (1. UCLA/UC Berkeley)

9:50 AM - 10:30 AM

[29-KN-02] Large-scale high-brightness photonic-crystal surface-emitting lasers by control of Hermitian and non-Hermitian couplings

*Susumu Noda¹ (1. Kyoto University)

10:30 AM - 10:40 AM

[29-KN-Break] Short Break

10:40 AM - 11:20 AM

[29-KN-03] Photonic Crystals in Chiral Space

*Philip Russell¹ (1. MPI Science of Light)

11:20 AM - 12:00 PM

[29-KN-04] Nanophotonics for tailoring radiation from fast electrons

*Marin Soljacic¹ (1. MIT)

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Oral Session

Session A

Wed. Mar 29, 2023 1:30 PM - 3:30 PM Kanda-Myoujin Hall (1F)

Marko Loncar (Harvard University)

1:30 PM - 2:00 PM

[29-A-01] Solid-state LiDAR equipped with photonic crystal beam scanner

*Toshihiko Baba¹ (1. Yokohama National University)

2:00 PM - 2:30 PM

[29-A-02] The True Advantage of Nanophotonics for Biological Applications

*Thomas Fraser Krauss¹ (1. University of York)

2:30 PM - 2:45 PM

[29-A-03] Passive Nanophotonic Optical Isolators

*Alexander D. White¹, Geun Ho Ahn¹, Kasper Van Gasse¹, Jelena Vuckovic¹ (1. Stanford)

2:45 PM - 3:00 PM

[29-A-04] Optical trapping and manipulation of biological objects with photonic crystal nanotweezers

Nicolas Villa¹, Simon Glicenstein², Enrico Tartari¹, Manon Tardif², Emmanuel Picard², Pierre R. Marcoux³, Marc Zelsmann⁴, Gregory Resch⁵, Romuald Houdré¹, *Emmanuel HADJI²

(1. Institut de Physique, École Polytechnique Fédérale de Lausanne, CH-1015 Lausanne, Switzerland, 2. Univ. Grenoble Alpes, CEA, Grenoble INP, IRIG, PHELIQS, SiNaPS, 38000 Grenoble, France, 3. Univ. Grenoble Alpes, CEA, LETI, Minatec-Campus, 38054 Grenoble, France, 4. Univ. Grenoble Alpes, CNRS, CEA/LETI, Grenoble INP, LTM, 38054 Grenoble, France, 5. Laboratory of bacteriophages and phage therapy, Center for Research and Innovation in Clinical Pharmaceutical Sciences (CRISP), Lausanne University Hospital (CHUV), Switzerland)

3:00 PM - 3:15 PM

[29-A-05] Design of an Ultra-thin Faraday Rotator based on a Magneto-Photonic Crystal

*Siyuan Gao¹, Yasutomo Ota², Satoshi Iwamoto¹ (1. RCAST, The Univ. of Tokyo, 2. Keio Univ.)

3:15 PM - 3:30 PM

[29-A-06] Dielectric Mie Voids: Confining Light in Air

*Mario Hentschel¹, Kirill Koshelev², Florian Sterl¹, Steffen Both¹, Julian Karst¹, Lida Shamsafar¹, Thomas Weiss^{1,3}, Yuri Kivshar², Harald Giessen¹

(1. 4th Physics Institute and Research Center SCoPE, University of Stuttgart, Stuttgart, Germany, 2. Nonlinear Physics Centre, Research School of Physics, Australian National University, Canberra Australia, 3. Institute of Physics, University of Graz, and NAWI Graz, Graz, Austria)

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Session B

Wed. Mar 29, 2023 3:50 PM - 5:50 PM Kanda-Myoujin Hall (1F)

Amir Safavi-Naeini (Stanford University)

3:50 PM - 4:20 PM

[29-B-01] Integrated Lithium Niobate Photonics

*Marko Loncar¹ (1. Harvard Univ.)

4:20 PM - 4:50 PM

[29-B-02] Direct Confirmation of Super-Planckian Radiation Emitted from a Photonic-Crystal Filament

*Shawn-Yu Lin¹, Mei-Li Hsieh¹, Sajeed John²
(1. Rensselaer Polytechnic Institute, 2. University of Toronto)

4:50 PM - 5:05 PM

[29-B-03] Applications of Polarization Grating fabricated by Autoclone Technology

*Takayuki Kawashima¹, Toru Tomimatsu¹, Takashi Oonuma¹, Shojiro Kawakami¹
(1. Photonic Lattice, Inc.)

5:05 PM - 5:20 PM

[29-B-04] Emission Suppression in Low Index Quasiperiodic Structures

*Meraj E Mustafa¹, Soumyadeep Saha², Lukas Maiwald¹, Manfred Eich^{1,3}, Alexander Yu. Petrov^{1,3}
(1. Institute of Optical and Electronic Materials, Hamburg University of Technology, Germany, 2. Waterloo Institute for Nanotechnology, University of Waterloo, Waterloo, ON, Canada, 3. Institute of Photoelectrochemistry, Helmholtz-Zentrum Hereon, Germany)

5:20 PM - 5:35 PM

[29-B-05] Photonic Z2 topological Anderson insulators

*Ruo-Yang Zhang¹, Xiaohan Cui¹, Zhao-Qing Zhang¹, Che Ting Chan¹
(1. Hong Kong University of Science and Technology)

5:35 PM - 5:50 PM

[29-B-06] Van der Waals materials for nanophotonics and laser devices

Isabel Barth¹, Manuel Deckart¹, Donato Conteduca¹, Panaiot Zotev², Michael Heuken³,
Guilherme Arruda⁴, Emiliano Martins⁴, Alexander Tartakovskii², Thomas Krauss¹, *Yue Christina
Wang¹

(1. University of York, 2. University of Sheffield, 3. AIXTRON SE, 4. University of São Paulo)

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Session C

Thu. Mar 30, 2023 9:00 AM - 10:30 AM Kanda-Myoujin Hall (1F)

Chao Peng (Peking University)

9:00 AM - 9:30 AM

[30-C-01] Exploring photonic band topology in synthetic frequency dimensions

*Shanhui Fan¹ (1. Stanford University)

9:30 AM - 10:00 AM

[30-C-02] Reconfigurable Topological Nanophotonics

*Masaya Notomi^{1,2,3}

(1. Tokyo Institute of Technology, 2. NTT Basic Research Laboratories, 3. NTT Nanophotonics Center)

10:00 AM - 10:30 AM

[30-C-03] Photonic crystals with unusual topological characters

*Che Ting Chan¹ (1. Hong Kong University of Science and Technology)

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Session D

Thu. Mar 30, 2023 11:00 AM - 12:00 PM Kanda-Myoujin Hall (1F)

Che Ting Chan (Hong Kong University of Science and Technology)

11:00 AM - 11:30 AM

[30-D-01] Unconventional Propagation of Shaped Light in 3D Cavity Superlattices and Photonic Band Gap Crystals

*Willem L. Vos¹, Marek Kozon^{1,2}, Lars J. Corbijn van Willenswaard^{1,2}, Timon J. Vreman¹, Manashee Adhikary^{1,3}, Cornelis A.M. Hartevelde¹, Ravitej Uppu^{1,4}, Melissa J. Goodwin^{1,5}, Ad Legendijk^{1,6}

(1. Complex Photonic Systems (COPS), MESA+ Institute, University of Twente, 7500 AE Enschede, The Netherlands, 2. Mathematics of Computational Science (MACS), MESA+ Institute, University of Twente, 7500 AE Enschede, The Netherlands, 3. Advanced Research Center for Nanolithography (ARCNL), 1098 XG Amsterdam, The Netherlands, 4. Department of Physics and Astronomy, The University of Iowa, Iowa City, Iowa 52242, U.S.A., 5. Nanolab NL, MESA+ Institute, University of Twente, 7500 AE Enschede, The Netherlands, 6. Institut Langevin, ESPCI Paris Tech, F-75005 Paris, France)

11:30 AM - 12:00 PM

[30-D-02] Distorted Photonic Crystal -novel approach of beam trajectory control-

*Kyoko Kitamura¹ (1. Kyoto Institute of Technology)

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Oral Session

Session E

Thu. Mar 30, 2023 3:30 PM - 6:00 PM

Kanda-Myoujin Hall (1F)

Christian Seassal (CNRS)

3:30 PM - 4:00 PM

[30-E-01] Nano-structure Brings New Ideas to Optoelectronic Devices

*Yidong Huang¹, Kaiyu Cui¹, Fang Liu¹, Xue Feng¹, Wei Zhang¹ (1. Tsinghua University)

4:00 PM - 4:30 PM

[30-E-02] Quantum Optomechanical Transducers

*Amir Safavi-Naeini¹ (1. Stanford University)

4:30 PM - 4:45 PM

[30-E-03] Demonstration of optically tunable coupling between two nanomechanical oscillators

*Feng Tian^{1,2}, Masato Takiguchi^{2,3}, Eiichi Kuramochi^{2,3}, Hisashi Sumikura^{2,3}, Masaya Notomi^{2,3,4}, Satoshi Iwamoto¹

(1. Research Center for Advanced Science and Technology, The University of Tokyo, 2. NTT Basic Research Laboratory, 3. NTT Nanophotonics Center, 4. Department of Physics, Tokyo Institute of Technology)

4:45 PM - 5:00 PM

[30-E-04] Emitter-Optomechanical Interaction in High-Q hBN Nanocavities

*Chenjiang Qian¹, Viviana Villafañe¹, Martin Schalk¹, Georgy V. Astakhov², Ulrich Kentsch², Manfred Helm², Pedro Soubelet¹, Andreas V. Stier¹, Jonathan J. Finley¹

(1. Walter Schottky Institut and Physik Department, Technische Universität München, Am Coulombwall 4, 85748 Garching, Germany, 2. Helmholtz-Zentrum Dresden-Rossendorf, Institute of Ion Beam Physics and Materials Research, 01328 Dresden, Germany)

5:00 PM - 5:15 PM

[30-E-05] Quantum Networking with Diamond Color Centers in Photonic Crystal Resonators

*Daniel Rimoli Assumpcao¹, Can Knaut¹, Yan Qi Huan¹, Pieter-Jan Stas¹, Aziza Suleymanzade¹, Yan-Cheng Wei¹, Maddie Sutula¹, Eric Bersin², Erik Knall¹, Neil Sinclair¹, Mikhail Lukin¹, Marko Loncar¹ (1. Harvard University, 2. Massachusetts Institute of Technology)

5:15 PM - 5:30 PM

[30-E-06] Heterogeneous Integration of Group-IV Diamond Color Centers and Thin-Film Lithium Niobate Photonics

*Hope Lee Lee¹, Daniel Riedel¹, Jakob Grzesik¹, Jason F. Herrmann¹, Shahriar Aghaeimeibodi¹, Jean-Michel Borit¹, Vahid Ansari¹, Hubert S. Stokowski¹, Luke Qi¹, Taewon Park¹, Alex Y. Hwang¹, Timothy P McKenna¹, Patrick McQuade¹, Haiyu Lu¹, Zhi-Xun Shen¹, Amir Safavi-Naeini¹, Jelena Vučković¹ (1. Stanford University)

5:30 PM - 5:45 PM

[30-E-07] Generation of Entangled Photon Pairs with Silicon Photonic Crystal Cavities via Spontaneous Four-Wave Mixing

*Andrea Barone¹, Thanavorn Poempool², Marco Clementi^{1,3}, Alessandro Marcia¹, Marco Liscidini¹, Daniele Bajoni⁴, Dario Gerace¹, Thomas Fromherz², Matteo Galli¹
(1. Physics Dept., Univ. of Pavia, 2. Semiconductor and Solid State Physics Inst., Johannes Kepler Univ., 3. Photonic Systems Laboratory, École Polytechnique Fédérale de Lausanne, Switzerland, 4. Information and Industrial Engineering Dept., Univ. of Pavia)

5:45 PM - 6:00 PM

[30-E-08] Optimization of photonic-crystal surface-emitting lasers via quantum annealing

*Takuya Inoue¹, Yuya Seki², Shu Tanaka², Nozomu Togawa³, Kenji Ishizaki¹, Susumu Noda¹
(1. Kyoto Univ., 2. Keio Univ., 3. Waseda Univ.)

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Session F

Fri. Mar 31, 2023 9:00 AM - 10:30 AM Kanda-Myoujin Hall (1F)

Willem Vos (University of Twente)

9:00 AM - 9:30 AM

[31-F-01] Local investigations of topological edge states: robustness and breakdown of spin-momentum locking

*Laurens Kuipers¹ (1. Kavli Institute Delft)

9:30 AM - 10:00 AM

[31-F-02] Inverse designed, densely integrated classical and quantum photonics

*Jelena Vuckovic¹ (1. Stanford University)

10:00 AM - 10:15 AM

[31-F-03] Valley-Hall Resonator Devices for Integrated Quantum Photonic Circuits

*Nicholas John Martin¹, Mahmoud Jalali Mehrabad¹, Andrew Foster¹, René Dost¹, Edmund Clarke², Pallavi Patil², Maurice Skolnick¹, Luke Wilson¹

(1. University of Sheffield, 2. EPSRC National Epitaxy Facility)

10:15 AM - 10:30 AM

[31-F-04] Observation of Landau Levels and Topological Edge States in Photonic Crystals with Engineered Synthetic Strain

*René Barczyk¹, Daniël Muis², Sonakshi Arora², Kobus Kuipers², Ewold Verhagen¹

(1. Center for Nanophotonics, AMOLF, Amsterdam, The Netherlands, 2. Kavli Institute of Nanoscience, Delft University of Technology, Delft, The Netherlands)

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Session G

Fri. Mar 31, 2023 11:00 AM - 12:30 PM Kanda-Myoujin Hall (1F)

Yidong Huang (Tsinghua University)

11:00 AM - 11:30 AM

[31-G-01] Chiral Resonant Metaphotonics and Metasurfaces

*Yuri Kivshar¹ (1. Australian National University)

11:30 AM - 12:00 PM

[31-G-02] Bright and dark modes in periodic metasurfaces, from light emission to photocatalysis

*Christian Seassal¹, Raphaël Mermet-Lyauoz¹, Jérôme Capitolis¹, Marwa Hamandi², Marion Hochedel³, Emmanuel Drouard¹, Hai Son Nguyen¹, Céline Chevalier¹, Chantal Guillard², Nicolas Crespo-Monteiro³, Yves Jourlin³, Clémentine Symonds⁴, Joël Bellessa⁴, Emmanuelle Deleporte⁵ (1. Université de Lyon, CNRS, Ecole Centrale de Lyon, INSA Lyon, Université Claude Bernard Lyon 1, CPE Lyon, 2. Univ. Lyon, Institut de Recherches sur la Catalyse et l'Environnement de Lyon-IRCELYON- UMR 5256, CNRS, Université Claude Bernard Lyon 1, 3. Univ. Lyon, Laboratoire Hubert Curien UMR 5516 CNRS, 4. Univ. Lyon, Université Claude Bernard Lyon 1, CNRS, Institut Lumière Matière, 5. Université Paris-Saclay, ENS Paris-Saclay, CNRS, Centrale Supélec, LuMIn)

12:00 PM - 12:30 PM

[31-G-03] Terahertz integrated photonics based on photonic crystals and silicon microstructures

*Masayuki Fujita¹ (1. Osaka Univ.)

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Session H

Fri. Mar 31, 2023 2:00 PM - 3:30 PM Kanda-Myoujin Hall (1F)

Laurens Kuipers (Delft University of Technology)

2:00 PM - 2:30 PM

[31-H-01] Semiconductor Nanolasers with ultra-low Threshold Current

*Jesper Moerk¹, Evangelos Dimopoulos¹, Yi Yu¹, Meng Xiong¹, Marco Saldutti¹, Elizaveta Semenova¹, Kresten Yvind¹ (1. Technical University of Denmark)

2:30 PM - 3:00 PM

[31-H-02] Non-Hermitian resonators: the Qs and Vs of their quasinormal mode

*Philippe Lalanne¹ (1. CNRS, Institut d'Optique)

3:00 PM - 3:15 PM

[31-H-03] Vector Beam Lasing from a Standing Hollow-Core GaN Nanowire on Sapphire

*Masato Takiguchi^{1,2}, Sylvain Sergent^{1,2}, Benjamin Damilano³, Stéphane Vézian³, Sébastien Chenot³, Nicole Yazigi³, Taiki Yoda², Tai Tsuchizawa^{1,4}, Hisashi Sumikura^{1,2}, Akihiko Shinya^{1,2}, Masaya Notomi^{1,2}

(1. NTT Nanophotonics Center, 2. NTT Basic Research Labs, 3. CNRS-CRHEA, 4. NTT Device Technology Labs)

3:15 PM - 3:30 PM

[31-H-04] Dually Modulated Photonic-Crystal Surface-Emitting Lasers Generating Various Beam Patterns

*Ryoichi Sakata¹, Kenji Ishizaki¹, Menaka De Zoysa¹, Takuya Inoue¹, Akira Imamura¹, Zhao Hairu¹, Susumu Noda¹ (1. Kyoto University)

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Session I

Fri. Mar 31, 2023 4:00 PM - 5:30 PM Kanda-Myoujin Hall (1F)

Yuri Kivshar (Australian National University)

4:00 PM - 4:30 PM

[31-I-01] Lasing Action of Topological Bound State in the Continuum

*Chao Peng¹ (1. Peking University)

4:30 PM - 5:00 PM

[31-I-02] The Berkeley Surface-Emitting Laser (BerkSEL), a scale-invariant laser?

*Boubacar Kante¹ (1. UC Berkeley)

5:00 PM - 5:15 PM

[31-I-03] Topological invariant of non-Hermitian photonic bands undergoing band inversion

Paul Bouteyre¹, Ferrier Lydie¹, Xuan Dung Nguyen^{2,3}, Xavier Letartre¹, Ségolène Callard¹, Taha Benyattou¹, Pierre Viktorovitch¹, *Hai Son Nguyen^{1,4}

(1. Univ Lyon, Ecole Centrale de Lyon, INSA Lyon, INL, France, 2. Brown University, USA, 3. Institute for Basic Science (IBS), Korea, 4. Institut Universitaire de France (IUF), France)

5:15 PM - 5:30 PM

[31-I-04] Photonic quadrupole topological insulator using orbital-induced synthetic flux

*Julian Schulz¹, Jiho Noh², Wladimir A. Benalcazar^{3,4}, Gaurav Bahl², Georg von Freymann^{1,5}

(1. Physics Department and Research Center OPTIMAS, TU Kaiserslautern, 67663 Kaiserslautern, Germany, 2. Department of Mechanical Science and Engineering, University of Illinois at Urbana-Champaign, Urbana, Illinois 61801, USA, 3. Department of Physics, Princeton University, Princeton, New Jersey 08542, USA, 4. Department of Physics, Emory University, Atlanta, GA 30322, USA, 5. Fraunhofer Institute for Industrial Mathematics ITWM, 67663 Kaiserslautern, Germany)