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Technical Sessions Program

Session AIL-1 – 25/04 10:50 – 12:30

G1: Surface Acoustic Wave Devices

Location: Room 1

Session chair: Thomas Baron, Femto-ST

10:50	5047	High Quality Factor Hybrid SAW/BAW Resonators...1
Saher Barsoum ¹ , Clemence Hellion ¹ , Elisa Vermande ¹ , Jean-Marie Quemper ¹ , Marie Bousquet ¹ , Alexandre Reinhardt ¹ , Thierry Laroche ² , Sylvain Ballandras ² , Bertrand Dubus ³ ¹ CEA-LETI, France, ² Frecjnjsys, France, ³ ISEN, France		
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Eric Michoulier, Alexandre Clairet, Saly Ndiaye, Florent Bernard, Emilie Courjon, Thierry Laroche, Sylvain Ballandras Frecnsys, France		
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Ryoto Suzuki ² , Masashi Suzuki ² , Shoji Kakio ² , Noritoshi Kimura ¹ ¹ Piezo Studio Inc., Japan, ² University of Yamanashi, Japan		
11:50	5090	A High-Performance NS-SAW Resonator Using 30° Y-Cut Lithium Niobate...14
Shuxian Wu ¹ , Zonglin Wu ¹ , Hangyu Qian ¹ , Feihong Bao ¹ , Gongbin Tang ² , Feng Xu ¹ , Jie Zou ¹ ¹ Fudan University, China, ² Institute of Novel Semiconductors, Shandong University, China		
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Zonglin Wu ¹ , Shuxian Wu ¹ , Hangyu Qian ¹ , Feihong Bao ¹ , Guomin Yang ¹ , Jie Zou ¹ , Gongbin Tang ² ¹ Fudan University, China, ² Institute of Novel Semiconductors, Shandong University, China		

Session AIL-2 – 25/04 10:50 – 12:30

G6: Clocks I

Location: Room 2

Session chair: Ekkehard Peik, PTB

10:50	5179	High Accuracy Assessment of a $^{176}\text{Lu}^+$ Frequency Reference...N/A
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Kyle Arnold², Michael Lee¹, Bianca Lee², Qichen Qin², Wen Yi Tan², Zhao Qi², Zhang Zhao², Zhiqiang Zhang¹, Murray Barrett¹

¹Center for Quantum Technologies, National University of Singapore, Singapore, ²CQT, Singapore

11:30	5265	Frequency Shift Evaluations of an $^{171}\text{Yb}^+$ (E3) Optical Clock Using Ancillary Transitions...N/A
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Nils Huntemann¹, Melina Filzinger¹, Martin Steinel¹, Richard Lange¹, Burghard Lipphardt¹, Hu Shao¹, Tanja E. Mehlstäubler², Thomas Lindvall³, Ekkehard Peik¹

¹Physikalisch-Technische Bundesanstalt, Germany, ²Physikalisch-Technische Bundesanstalt and Leibniz Universität Hannover, Germany, ³VTT Technical Research Centre of Finland Ltd, Germany

11:50	5044	Robust Operation of Two Sr Optical Lattice Clocks and Their Stability...N/A
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Matthew Johnson, William Bowden, Richard Hobson, Marco Schioppo, Filip Butuc-Mayer, Ian Hill
National Physical Laboratory, United Kingdom

12:10	5180	Ca^+ Optical Clocks: Recent Progress and Prospects on Applications...N/A
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Yao Huang, Hua Guan, Kelin Gao
Innovation Academy for Precision Measurement Science and Technology, Chinese Academy of Sciences, China

Session AIL-3 – 25/04 10:50 – 12:30

G5: Optical Frequency Transfer

Location: Room 3

Session chair: Pierre Waller, ESA

10:50	5187	A Coherent Optical Fibre Link Between France and Italy...N/A
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Matias Risaro¹, Simone Donadello¹, Alberto Mura¹, Cecilia Clivati¹, Irene Goti³, Stefano Conidio², Marco Pizzocaro¹, Michele Gozzelino¹, Giovanni A. Costanzo³, Filippo Levi¹, Davide Calonico¹, Etienne Cantin⁴, Olivier Lopez⁴, Anne Amy-Klein⁴, Mads Tonnes⁵, Benjamin Pointard⁵, Clara Zyskind⁵, Changlei Guo⁵, Manuel Andia⁵, William Moreno⁵, Yannick Foucault⁵, Miguel-Angel Cifuentes Marin⁵, Haosen Shang⁵, Maxime Mazouth⁵, Rodolphe Le Targat⁵, Michel Abgrall⁵, Luca Lorini⁵, Jérôme Lodewyck⁵, Paul-Éric Pottie⁵, Sébastien Bize⁵

¹INRiM - Istituto Nazionale di Ricerca Metrologica, Italy, ²INRiM - Istituto Nazionale di Ricerca Metrologica / Politecnico di Torino, Italy, ³INRiM - Istituto Nazionale di Ricerca Metrologica and Politecnico di Torino, Italy, ⁴Laboratoire de Physique des Lasers, Université Sorbonne Paris Nord, CNRS, France, ⁵LNE-SYRTE, Observatoire de Paris - Université PSL, CNRS, Sorbonne Université, France

11:10	5140	A 5000 km Extended Optical Frequency Reference Dissemination with REFIMEVE...N/A
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Etienne Cantin², Olivier Lopez², Christian Chardonnet⁴, Anne Amy-Klein², Mads Tonnes³, Benjamin Pointard³, Rodolphe Le Targat³, Paul-Éric Pottie³, Martin Rabault¹, Vincent Menoret¹, Marie Houssin⁵, Nicolas Quintin⁶

¹iXblue, France, ²Laboratoire de Physique des Lasers, Université Sorbonne Paris Nord, CNRS, France, ³LNE-SYRTE, Observatoire de Paris - Université PSL, CNRS, Sorbonne Université, France, ⁴LPL, Université Sorbonne Paris Nord, CNRS, France, ⁵PIIM, Aix Marseille University, CNRS, France, ⁶RENATER, France

11:30	5167	Noise Behavior and Uncertainty Contributions of Coherent Optical Fiber Links...N/A
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Mads Tonnes², Philip Tuckey³, Rodolphe Le Targat², Paul-Éric Pottie², Etienne Cantin¹, Olivier Lopez¹, Anne Amy-Klein¹

¹Laboratoire de Physique des Lasers, Université Sorbonne Paris Nord, CNRS, France, ²LNE-SYRTE, Observatoire de Paris - Université PSL, CNRS, Sorbonne Université, France, ³Observatoire de Paris, France

11:50	5021	Optical Frequency Transfer with 1×10^{-21} Uncertainty Using a DFB Laser-Based Fiber Brillouin Amplifier...N/A
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Jaffar Kadum, Alexander Kuhl, Jigxian Ji, Thomas Waterholter, Sebastian Koke
Physikalisch-Technische Bundesanstalt, Germany

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Lukasz Sliwczynski, Przemyslaw Krehlik, Lukasz Buczek
AGH University of Science and Technology, Poland

Session A2L-1 – 25/04 14:00 – 16:00

G1: Acoustic Devices

Location: Room 1

Session chair: Cristian Cassella, Northeastern University

14:00	5124	A Capacitive Coupling Technique to Mitigate Frequency Mismatch Effects in MEMS Resonators...26
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Luca Colombo¹, Giuseppe Michetti¹, Pietro Simeoni¹, Mary E. Galanko Klemash², Sarah S. Bedair², Matteo Rinaldi¹

¹Northeastern University, United States, ²US Army Research Laboratory, United States

14:20	5125	Accurate Simulation of Voltage Amplification in High-Performance MEMS-Based Matching Networks...30
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Luca Colombo¹, Giuseppe Michetti¹, Pietro Simeoni¹, Mary E. Galanko Klemash², Tobiah M. Kiebal², Sarah S. Bedair², Matteo Rinaldi¹

¹Northeastern University, United States, ²US Army Research Laboratory, United States

14:40	5286	Constructive Utilization of Nonlinear Dynamics in MEMS...N/A
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Jun Yu, Hanna Cho

Ohio State University, United States

15:20	5282	Ultrahigh Quality Factors in Ferroelectric Hf _{0.5} Zr _{0.5} O ₂ Resonators with Remote Electrical Drive...N/A
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Xu-Qian Zheng, Troy Tharpe, Philip X.-L. Feng, Roozbeh Tabrizian
University of Florida, United States

15:40	5237	Terminal Gain in LN-on-Si Lamb Mode Acoustoelectric Waveguides...N/A
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Hakhamanesh Mansoorzare, Reza Abdolvand
University of Central Florida, United States

Session A2L-2 – 25/04 14:00 – 16:00

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Location: Room 2

Session chair: Ashwin Seshia, University of Cambridge

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Sila Deniz Caliskan, Vageswar Rajaram, Sungho Kang, Antea Risso, Zhenyun Qian, Matteo Rinaldi
Northeastern University, United States

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F. Levent Degertekin
Georgia Institute of Technology, United States

15:00	5178	High-Q Factor Multiferroic Resonant MEMS Low Frequency Magnetic Field Sensors...37
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Michael DaGati³, Sydney Sofronici³, Yujia Huo³, Peter Finkel², Konrad Bussmann², Keith McLaughlin¹, Brad Wheeler¹, Thomas Mion², Margo Staruch², Roy H. Olsson III³
¹Leidos, United States, ²Naval Research Laboratory, United States, ³University of Pennsylvania, United States

15:20	5267	Temperature-Insensitive Resonant Strain Sensor...40
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Xintian Liu, Qianyi Xie, Alper Ozgurluk, Clark T.-C. Nguyen
University of California, Berkeley, United States

15:40	5272	MoTe2 NEMS Resonators for Near-Infrared Light Detection...N/A
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S M Enamul Hoque Yousuf, Xu-Qian Zheng, Philip X.-L. Feng
University of Florida, United States

Session A2L-3 – 25/04 14:00 – 16:00

G3: Novel Techniques for Atomic Clocks/Sensors

Location: Room 3

Session chair: Rodolphe Boudot, FEMTO-ST/CNRS

14:00	5269	Integrated Photonics and Vacuum Package Development for a Cold-Atom Interferometer...N/A
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Peter Schwindt¹, Jongmin Lee¹, Hayden McGuinness¹, Daniel Soh¹, Justin Christensen¹, Roger Ding¹, Gregory Hoth¹, Bethany Little¹, Adrian Orozco¹, Randy Rosenthal¹, Anthony Lentine¹, Michael Gehl¹, Ashok Kodigala¹, Eirk Skogen¹, Aaron Ison¹, Charles Walker¹, Grant Biedermann²

¹Sandia National Laboratories, United States, ²University of Oklahoma, United States

14:40	5162	Grating Magneto-Optical Trap with Integrated Magnetic Chip...N/A
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Alan Bregazzi, James McGilligan, Aidan Arnold, Paul Griffin, Erling Riis
University of Strathclyde, United Kingdom

15:00	5077	Millimeter-Wave Oscillator Disciplined by Molecular Rotational Spectroscopy...46
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James Greenberg, Antoine Rolland, Martin Fermann
IMRA America, Inc., United States

15:20	5105	Progress Toward Miniaturized Atomic Beam Sources...N/A
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Gabriela Martinez², John Kitching¹, William McGehee¹, Chao Li³, Chandra Raman³

¹National Institute of Standards and Technology, United States,

²National Institute of Standards and Technology and University of Colorado Boulder, United States, ³NIST, United States

Session A3P-4 – 25/04 16:20 – 18:00

Posters 1, In-Person (G1)

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Jose Manuel Carmona-Cejas, Teona Mirea, Marta Clement Lorenzo, Jimena Olivares Roza

GMME-CEMDATIC-ETSI de Telecomunicación. Universidad Politécnica de Madrid, Spain

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Jean-Marc Lesage, Jean-François Penn
DGA, France

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Sacha Welinski¹, Loic Morvan¹, Daniel Dolfi², Vincent Crozatier¹

¹Thales Research & Technology, France, ²Thales Research and Technology, France

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Posters 1, In-Person (G3)

Location: Poster Area 3

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¹ École Polytechnique Fédérale de Lausanne, Switzerland, ² Toscana Life Sciences, École Polytechnique Fédérale de Lausanne, Italy, ³ Université de Neuchâtel, Switzerland		

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¹ LNE-SYRTE, Observatoire de Paris, France, ² Thales R&T France, France, ³ Thales R&T France and LNE-SYRTE, France, ⁴ Thales Research & Technology, France, ⁵ Thales Research and Technology, France		

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¹ École Polytechnique Fédérale de Lausanne, Switzerland, ² Toscana Life Sciences, École Polytechnique Fédérale de Lausanne, Switzerland, ³ Université de Neuchâtel, Switzerland		

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Sean Dyer, Paul Griffin, Aidan Arnold, Erling Riis, James McGilligan University of Strathclyde, United Kingdom		

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William Dubosclard, Leonid Sidorenkov, Carlos Leonardo Garrido Alzar LNE-SYRTE, Observatoire de Paris - Université PSL, CNRS, Sorbonne Université, France		

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Harald Hauglin, Thomas Rødningen, Vetle Øversjøen
Justervesenet - Norwegian Metrology Service, Norway

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Posters 1, In-Person (G4)

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Jerome Juillard², Zalfa Jouni², Laurent Bourgois², Erwan Libessart², Margot Morlans³,
Jean Guerard³, Raphael Levy³, Alexis Brenes¹, Elie Lefeuvre¹
¹C2N, France, ²CentraleSupélec/GEEPS, France, ³ONERA, France

Poster	5261	Atomic Interferometry for Gravity Gradient Measurement...N/A
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Raphael Piccon, Sumit Sarkar, Sebastien Merlet, Franck Pereira Dos Santos
LNE-SYRTE, Observatoire de Paris - Université PSL, CNRS, Sorbonne Université, France

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Pascale Defraigne ² , Elisa Pinat ² , Gérard Petit ¹ ¹ BIPM Bureau International des Poids et Mesures, France, ² Royal Observatory of Belgium, Belgium		
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Bruno Bertrand ² , Aydin Ergen ² , Henri Martin ² , Natalia Vandenschrieck ¹ , Pascale Defraigne ² ¹ ECAM Institut Supérieur Industriel, Belgium, ² Royal Observatory of Belgium, Belgium		
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Pierre Waller, Cedric Plantard ESA/ESTEC, Netherlands		
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Filippo Levi², Davide Calonico², Elena Cantoni², Giancarlo Cerretto², Roberto Concas², Franco Fiasca², Alberto Mura², Andrea Perucca², Marco Sellone², Ilaria Sesia², Giovanna Signorile², Tung Than Thai², Sani Sarcevic¹
¹IMBH, Bosnia, ²INRiM - Istituto Nazionale di Ricerca Metrologica, Italy

Poster	5254	Redefinition of the Si Second: Impact on Users and Stimulus for the Redefinition Subgroup a of the CCTF Task Force "Roadmap to the Redefinition of the Second" ...N/A
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Marina Gertsvolf², Gaetano Mileti³, Frederic Meynadier¹
¹BIPM Bureau International des Poids et Mesures, France, ²National Research Council Canada, Canada, ³Université de Neuchâtel, Switzerland

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Posters 1, In-Person (G6)

Location: Poster Area 6

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Jacob Tunesi, Alissa Silva, Adam Parsons, Jake Paterson, Marco Schioppo, Anthony Harwood, Helen S. Margolis
National Physical Laboratory, United Kingdom

Poster	5029	Towards the Development of an Optical Lattice Clock Using Bosonic Isotopes of Mercury...N/A
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Clara Zyskind, Manuel Andia, Changlei Guo, Sebastien Bize
LNE-SYRTE, Observatoire de Paris - Université PSL, CNRS, Sorbonne Université, France

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Anthony Gusching¹, Ivan Ryger¹, Moustafa Abdel Hafiz¹, Nicolas Passilly¹, Jacques Millo¹, Rodolphe Boudot²

¹FEMTO-ST Institute, France, ²FEMTO-ST Institute, CNRS, France

Poster	5052	Lifetime Assessment and Performance of a Microfabricated Strontium Atomic Vapor Cell...N/A
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Jacob Pate², John Kitching¹, Matthew Hummon¹

¹National Institute of Standards and Technology, United States, ²National Institute of Standards and Technology and University of Colorado Boulder, United States

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Tabea Nordmann¹, Hartmut Nimrod Hauser¹, Jonas Keller¹, Jan Kiethe¹, Leon Schomburg¹, Hongli Liu¹, Nishant Bhatt¹, Tanja E. Mehlstübler²

¹Physikalisch-Technische Bundesanstalt, Germany, ²Physikalisch-Technische Bundesanstalt and Leibniz Universität Hannover, Germany

Poster	5072	Active Rejection at the Level of 10^{-7} of the Residual Amplitude Modulation...N/A
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Jonathan Gillot, Santerelli Falzon Tetsing-Talla, Severine Denis, Gwenhael Goavec-Merou, Jacques Millo, Clement Lacroute, Yann Kersale
FEMTO-ST Institute, France

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Jialiang Yu², Thomas Legero², Fritz Riehle², Chun Yu Ma², Sofia Herbers², Daniele Nicolodi², Dhruv Kedar¹, Eric Oelker³, Jun Ye¹, Uwe Sterr²
¹JILA, NIST and university of Colorado, United States, ²Physikalisch-Technische Bundesanstalt, Germany, ³University of Glasgow, United Kingdom

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Physikalisch-Technische Bundesanstalt, Germany

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Roman Blum, Sylvain Karlen, Stefan Kundermann, Steve Lecomte
CSEM SA, Switzerland

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Sebastien Bize², Ekkehard Peik⁴, Chris Oates³, Gérard Petit¹
¹BIPM Bureau International des Poids et Mesures, France, ²LNE-SYRTE, Observatoire de Paris - Université PSL, CNRS, Sorbonne Université, France, ³National Institute of Standards and Technology, United States, ⁴Physikalisch-Technische Bundesanstalt, Germany

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William Moreno³, Fatima Rahmouni³, Benjamin Pointard³, Paul-Eric Pottie³, Pacome Delva³, Jerome Lodewyck³, Rodolphe Le Targat³, Jesus Romero Gonzalez⁴, Marie-Francoise Lalancette⁵, Guillaume Lion², Olivier Jamet¹

¹IGN, France, ²Institut de Physique du Globe de Paris, Université de Paris, CNRS, IGN, ENSG-Géomatique, France, ³LNE-SYRTE, Observatoire de Paris - Université PSL, CNRS, Sorbonne Université, France, ⁴Real Instituto y Observatorio de la Armada, Spain, ⁵SHOM, France

Poster	5198	Set-Up for Continuous Superradiance Clock Based on Strontium Atoms...N/A
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Marcin Bober, Omid Vartehtarparvar, Sławomir Bilicki, Domagoj Kovacic, Adam Ledzinski, Piotr Morzynski, Mateusz Narożnik, Marcin Witkowski, Mehrdad Zarei, Michał Zawada
Nicolaus Copernicus University, Poland

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Marcin Bober², Sławomir Bilicki², Georgy Kazakov³, Anahit Gogyan¹, Domagoj Kovacic², Adam Ledzinski², Piotr Morzynski², Mateusz Narożnik², Marcin Witkowski², Omid Vartehtarparvar², Mehrdad Zarei², Michał Zawada²

¹Institute for Physical Research of National Academy of Sciences of Armenia, Armenia, ²Nicolaus Copernicus University, Croatia, ²Nicolaus Copernicus University, Poland, ³Quantum metrology group, Atominstitut TU Wien, Austria

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Adam Linek, Roman Ciurylo, Piotr Zuchowski, Marcin Witkowski
Nicolaus Copernicus University, Poland

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Benjamin Pointard, Michel Abgrall, Michel Lours, Paul-Eric Pottie, Rodolphe Le Targat
LNE-SYRTE, Observatoire de Paris - Université PSL, CNRS, Sorbonne Université, France

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Marcin Witkowski, Roman Ciurylo, Adam Linek, Rodolfo Munoz Rodriguez, Michał Zawada
 Nicolaus Copernicus University, Poland

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Marcin Witkowski², Roman Ciurylo², Anahit Gogyan¹, Adam Linek², Rodolfo Munoz Rodriguez², Paweł Tecmer², Michał Zawada²
¹Institute for Physical Research of National Academy of Sciences of Armenia, Armenia, ²Nicolaus Copernicus University, Poland

Poster	5243	Evaluation of Systematic Shifts and Frequency Ratio of 5s ² 1S ⁰ -5s5p 3P ⁰ Clock Transition for 87Sr and 88Sr Optical Clock...N/A
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Domagoj Kovacic, Sławomir Bilicki, Marcin Bober, Piotr Morzynski, Adam Ledzinski, Omid Vartehparvar, Mehrdad Zarei, Michał Zawada
 Nicolaus Copernicus University, Poland

Poster	5246	Second-Stage Cooling of Indium Ions for Multi-Ion Clock Operation...N/A
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Hartmut Nimrod Hausser², Tabea Nordmann², Jonas Keller², Jan Kiethe², Moritz von Boehn², Nishant Bhatt², Valeriy Yudin¹, Oleg Prudnikov¹, Tanja E. Mehlstäubler³
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Sheng Zhou, Francesca Fama, Camila Beli Silva, Stefan Alaric Schaffer, Shayne Bennetts, Florian Schreck
University of Amsterdam, Netherlands

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Filippo Bregolin, Pierre Thoumany, Dominik Niemietz, Florian Tauser, Thomas Puppe, Rafal Wilk
TOPTICA Photonics AG, Germany

Poster	5148	Optically Loaded Strontium Lattice Clock...N/A
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Matteo Barbiero, Davide Calonico, Filippo Levi, Marco G. Tarallo
INRiM - Istituto Nazionale di Ricerca Metrologica, Italy

Poster	5234	Towards the Development of an Optical Lattice Clock Testbed Setup for the iqClock Project...N/A
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Abhilash Jha, Alok Singh, Qiushuo Sun, Markus Gellesch, Jonathan M. Jones, Richard Barron, Yogeshwar Kale, Manan Jain, Vijay Singh, Kai Bongs, Yeshpal Singh
University of Birmingham, United Kingdom

Session BIP-4 – 26/04 08:40 – 10:20

Posters 2, Virtual (G1)

Location: Poster Area 1

Session chair: Thomas Baron, Femto-st

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Danhua Li², Salahuddin Raju¹, Mansun Chan¹, Chanjian Zhou²

¹Hong Kong University of Science and Technology, Hong Kong, ²South China University of Technology, China

Poster	5051	Fundamental Precision Limit of Frequency Measurement of Linear Harmonic Oscillators...N/A
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Mingkang Wang¹, Rui Zhang², Robert Ilic¹, Yuxiang Liu², Vladimir Aksyuk¹

¹National Institute of Standards and Technology, United States, ²Worcester Polytechnic Institute, United States

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Eduardo Lugo-Hernandez³, Jose Manuel Carmona-Cejas², Teona Mirea², Jimena Olivares¹, Juan Carlos Collado Gomez³, Jordi Mateu Mateu³

¹CEMDATIC-ETSI de Telecomunicación Universidad Politécnica de Madrid, Spain,

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Spain, ³Universitat Politecnica de Catalunya, Spain

Session BIP-5 – 26/04 08:40 – 10:20

Posters 2, Virtual (G2)

Location: Poster Area 2

Session chair: Guillaume De Giovanni, InnoDef

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Panxue Ma¹, Dongrui Yu², Xing Chen¹, Ziyang Chen², Bin Luo¹, Hong Guo²
¹Beijing University of Posts and Telecommunications, China, ²Peking University, China

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Gaspare Antona³, Giovanni A. Costanzo², Michele Gozzelino¹, Salvatore Micalizio¹, Claudio Calosso¹, Filippo Levi¹

¹INRiM - Istituto Nazionale di Ricerca Metrologica, Italy, ²INRiM - Istituto Nazionale di Ricerca Metrologica and Politecnico di Torino, Italy, ³Politecnico di Torino, Italy

Session BIP-6 – 26/04 08:40 – 10:20

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Location: Poster Area 3

Session chair: Fang Fang , NIM

Poster	5006	Toward a High-Performance Transportable Microwave Frequency Standard Based on Sympathetically-Cooled $^{113}\text{Cd}^+$ Ions...N/A
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Jize Han, Haoran Qin, Nongchao Xin, Shengnan Miao, Yiting Chen, Ying Zheng, Jianwei Zhang, Lijun Wang
Tsinghua University, China

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Xiumei Wang³, Jin He⁴, Weili Wang¹, Chengyuan Zhang¹, Yanjun Chen¹, Liang Wang¹, Yaxuan Liu¹, Lianshan Gao¹, Jingbiao Chen²
¹Beijing Institute of Radio Measurement and Metrology, China, ²Peking University, China, ³PKU-HKUST Shen Zhen-HongKong Institution, China, ⁴PKU-HKUST Shenzhen-Hong Kong Institution, China

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Tsinghua University, China

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Tsinghua University, China

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Kenta Matsumoto³, Sota Kagami³, Akihiro Kirihara³, Shinya Yanagimachi¹, Takeshi Ikegami², Atsuo Morinaga²
¹AIST, Japan, ²Micromachine Center, Japan, ³NEC Corporation, Japan

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Tokyo Metropolitan University, Japan

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Jianye Zhao¹, Ping Guo¹, Lin Dan¹, Hao Xu¹, Hongling Meng²

¹Peking University, China, ²Zhongkeqidi Optoelectronic Technology (Guangzhou) Co., Ltd., China

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Xuan He¹, Shengwei Fang², Zhichao Yuan², Jiayuan Chen², Xianghui Qi², Xuzong Chen², Qing Wang²

¹Institute of Quantum Electronics, Peking University, China ²Peking University, China

Poster	5109	Optical Generation of Microwave Signals for Fountain Clocks in Continuous Operation...N/A
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Burghard Lipphardt, Patrick Walkemeyer, Michael Kazda, Johannes Rahm, Stefan Weyers
Physikalisch-Technische Bundesanstalt, Germany

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Gregory Hoth, Bijunath Patla, Neil Ashby, Vladislav Gerginov
National Institute of Standards and Technology, United States

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Location: Poster Area 4

Session chair: Laura Popa, Exponent Inc.

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Jingqian Xi², Fangzheng Li², Lu Gao², Lei Xu², Yuan Wang², Chun Zhao², Chengxin Li³, Kunfeng Wang¹, Xingyin Xiong¹, Xudong Zou¹

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²Huazhong University of Science and Technology, China, ³University of Leuven, Belgium

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¹Fudan University, China, ²Institute of Novel Semiconductors, Shandong University, China

Poster	5268	Analysis of the Responses of Low-Noise Polymer-Plasticizer Coated Chemical Sensors in Liquids...N/A
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Nicholas Post, Florian Bender, Fabien Josse
Marquette University, United States

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Chenxia Liu², Tianwei Jiang¹, Tao Liu², Song Yu¹

¹Beijing University of Posts and Telecommunications, China, ²North China Electric Power University, China

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Meng Jiang², Shaowu Dong¹

¹National Time Service Center, Chinese Academy of Sciences, China, ²Xi'an Polytechnic University, China

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Peking University, China

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Xuan Yang¹, Panxue Ma¹, Yufei Zhang², Guohua Wu¹, Ziyang Chen², Bin Luo¹, Hong Guo²

¹Beijing University of Posts and Telecommunications, China, ²Peking University, China

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Zihao Liu¹, Yiming Bian¹, Yichen Zhang¹, Yang Li², Bingjie Xu², Song Yu¹

¹Beijing University of Posts and Telecommunications, China ²Institute of Southwestern Communication, Peking University, China

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Wen-Hung Tseng³, Tzu-Pang Tseng¹, Shinn-Yan Lin²

¹National Kaoshiung University of Science and Technology, Taiwan,

²Telecommunication Laboratories, Taiwan, ³Telecommunication Laboratories, Chunghwa Telecom Co., Ltd., Taiwan

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Haojie Wang¹, Chao Zhou², Ziyang Chen², Bin Luo¹

¹Beijing University of Posts and Telecommunications, China, ²Peking University, China

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CESNET, Czech Rep.

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Krzysztof Turza², Artur Binczewski², Wojbor Bogacki², Przemyslaw Krehlik¹, Lukasz Sliwczynski¹

¹AGH University of Science and Technology, Poland, ²Poznan Supercomputing and Networking Center, Poland

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Bo Liu¹, Weicheng Kong², Xinxing Guo³, Bo Li³, Shougang Zhang³, Ruifang Dong³, Tao Liu⁴

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Xiang Zhang, Xue Deng, Qi Zang, Dan Wang, Qian Zhou, Mengfan Wu, Tao Liu, Ruifang Dong, Shougang Zhang

University of Chinese Academy of Sciences, National Time Service Center, CAS, China

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Qian Zhou¹, Xiang Zhang¹, Qi Zang¹, Xue Deng¹, Mengfan Wu¹, Jie Liu¹, Dan Wang¹, Tao Liu², Ruifang Dong¹

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Poster	5188	Time and Frequency Dissemination and Time Scales Task Force on the Roadmap for the Redefinition of Second...N/A
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Davide Calonico², Tetsuya Ido³, Gianna Panfilo¹

¹BIPM Bureau International des Poids et Mesures, France, ²INRiM - Istituto Nazionale di Ricerca Metrologica, Italy, ³National Institute of Information and Communications Technology, Italy

Poster	5206	Improvements in the Realization of the Italian Time Scale UTC(IT)...N/A
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Elio Bertacco¹, Elena Cantoni¹, Giancarlo Cerretto¹, Roberto Costa¹, Franco Fiasca¹, Valerio Formichella¹, Filippo Levi¹, Alberto Mura¹, Andrea Perucca¹, Marco Pizzocaro¹, Fabrizio Pollastri¹, Marco Sellone¹, Ilaria Sesia¹, Giovanna Signorile¹, Paolo Terzi¹, Tung Than Thai¹, Daniele Rovera³, Giovanni A. Costanzo²
¹INRiM - Istituto Nazionale di Ricerca Metrologica, Italy, ²INRiM - Istituto Nazionale di Ricerca Metrologica and Politecnico di Torino, Italy, ³Rovera Freelance Consulting, France

Poster	5024	Combined Time and Frequency Transfer Over Fibre Using Spread Spectrum Technique...N/A
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Wei Huang, Shukree Wassin, Elvira Castello, Jochen Kronjaeger
National Physical Laboratory, United Kingdom

Poster	5025	Self-Lasing Technique for Controlling the Gain of Bi-Directional EDFA Used for Optical Frequency Transfer...N/A
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Shukree Wassin, Wei Huang, Elvira Castello, Jochen Kronjaeger
National Physical Laboratory, United Kingdom

Poster	5108	GLONASS Time and the Accuracy of Positioning and Timing by GLONASS Signals in 2021...N/A
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Andrei Druzhin, Tatiana Primakina, Aleksandr Feoktistov
Russian Institute of Radionavigation and Time, Russia

Session BIP-9 – 26/04 08:40 – 10:20

Posters 2, Virtual (G6)

Location: Poster Area 6

Session chair: John McFerran, UWA

Poster	5032	Progress on the Evaluation of the Blackbody Radiation Shift Uncertainty of NRC's Strontium Ion Clock...N/A
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Bin Jian², Pierre Dube², Miroslav Dolezal¹

¹Czech Metrology Institute, Czech Rep., ²National Research Council Canada, Canada

Poster	5033	Optical Frequency Division with a Comb Based on Difference Frequency Generation...N/A
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Sebastian Mueller, Reinhard Unterreitmayer, Thomas Puppe, Rafal Wilk
TOPTICA Photonics AG, Germany

Poster	5037	Measurement of Molecular Iodine Hyperfine Transition Near 554 nm...N/A
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Yiting Chen, Jianwei Zhang, Jize Han, Nongchao Xin, Shengnan Miao, Haoran Qin, Lijun Wang
Tsinghua University, China

Poster	5057	Progress Towards a Cs-Limited Uncertainty at $\pm 3 \times 10^{-16}$ of the Absolute Frequency Measurement of NMIJ-Yb1...N/A
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Takumi Kobayashi¹, Daisuke Akamatsu², Kazumoto Hosaka¹, Yusuke Hisai², Akiko Nishiyama¹, Akio Kawasaki¹, Masato Wada¹, Hajime Inaba¹, Takehiko Tanabe¹, Feng-Lei Hong², Masami Yasuda¹

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Poster	5075	Progress Towards Development of a Transportable Sr+ Ion Optical Clock at NRC...N/A
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Kosuke Kato, Pierre Dubé
National Research Council Canada, Canada

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Duo Pan, Tianyu Liu, Haosen Shang, Tiantian Shi, Jingbiao Chen
Peking University, China

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Jianxiang Miao, Jia Zhang, Tiantian Shi, Duo Pan, Jingbiao Chen
Peking University, China

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Jianxiang Miao, Jia Zhang, Tiantian Shi, Duo Pan, Jingbiao Chen
Peking University, China

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Physikalisch-Technische Bundesanstalt, Germany

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Mingkun Li², Pan Zhang², Bingjie Rao², Lulu Yan², Yanyan Zhang¹, Haifeng Jiang⁴,
Shougang Zhang³

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⁴University of Science and Technology of China, National Time Service Center, CAS, China

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Bingjie Rao², Pan Zhang², Mingkun Li², Lulu Yan², Xiguang Yang², Xin Chen², Shougang Zhang³, Haifeng Jiang⁴, Yanyan Zhang¹

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⁴University of Science and Technology of China, National Time Service Center, CAS, China

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Yani Zuo, Shaoyang Dai, Shiyang Cao, Fei Meng, Fasong Zheng, Weiliang Chen, Kun Liu, Tianchu Li, Fang Fang
National Institute of Metrology, China, China

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Florin Lucian Constantin
CNRS, France

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Claude Marceau, Scott Beattie, Marina Gertsolf
National Research Council Canada, Canada

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Markus Gellesch⁷, Yogeshwar Kale⁷, Abhilash Jha⁷, Alok Singh⁷, Jonathan M. Jones⁷, Qiushuo Sun⁷, Richard Barron⁷, Manan Jain⁷, Vijay Singh⁷, Kai Bongs⁷, Yeshpal Singh⁷, Pierre Thoumany⁵, Filippo Bregolin⁵, Florian Tauser⁵, Rafal Wilk⁵, Juergen Stuhler⁵, Joe Popple⁴, Stephen Bardell⁴, Bhavesh Patel⁴, Naveen Betadur⁴, Karen Munyard⁴, Ole Kock⁴, Ben Hammond⁴, Patrick Bowen³, Peter Morten Moselund³, Poul Varming³, Anthony Flavin², Marco Menchetti¹, Andrew Lord¹, Iqclock Consortium⁶
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Shengnan Zhang, Balsant Tiwari, Sandhya Ganesh, Preetam Ramchurn, Kai Bongs, Yeshpal Singh
University of Birmingham, United Kingdom

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Henry Timmers, Andrew Attar, Bennett Sodergren, Star Fassler, Evan Barnes, Saeid Rostami, Kurt Vogel, Kevin Knabe
Vescent Photonics, United States

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Qixin Liu, Ye Zhang, Zexin Yu, Jianfang Sun, Zhen Xu
SIOM, China

Session B2L-1 – 26/04 10:50 – 12:30

G2: Optical Oscillators

Location: Room 1

Session chair: Olivier Llopis, LAAS-CNRS, Université de Toulouse

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Pierre Travers², Yohann Léguillon², François Louf¹, Pierre-Alain Boucard¹, Loic Morvan³, Daniel Dolfi⁴, Vincent Crozatier³

¹Laboratoire de Mécanique et Technologie, France, ²Thales Land and Air Systems, France, ³Thales Research & Technology, France, ⁴Thales Research and Technology, France

11:10	5013	A CPT-Based Cs Cell Self-Sustained Microwave Oscillator...N/A
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Rodolphe Boudot², Moustafa Abdel Hafiz¹, Michael Petersen¹, Enrico Rubiola¹, Claudio Calosso³

¹FEMTO-ST Institute, France, ²FEMTO-ST Institute, CNRS, France, ³INRiM - Istituto Nazionale di Ricerca Metrologica, Italy

11:30	5137	Influence of the Optical Amplifier on Optoelectronic Oscillator with Optical Gain...N/A
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Guillaume Dangoisse³, Perrine Berger³, Vincent Crozatier³, Frederic van Dijk¹, Christophe Caillaud¹, Michael Verdun², Nadège Le Grand², Xavier Prat², Guillaume Canat²

¹III-V Lab, France, ²Lumibird, France, ³Thales Research & Technology, France

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Alexis Bougaud, Olivier Llopis, Arnaud Fernandez
LAAS, France

Session B2L-2 – 26/04 10:50 – 12:30

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Location: Room 2

Session chair: Ronald Holzwarth, MenloSystems

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Nicolas Cahuzac¹, Yuhao Liu¹, Marylise Saffre¹, Etienne Cantin², Olivier Lopez², Dang Bao An Tran¹, Rosa Santagata¹, Mathieu Manceau¹, Anne Amy-Klein², Benoit Darquie¹, Mads Tonnes³, Benjamin Pointard³, Michel Abgrall³, Luca Lorini³, Yann Le Coq³, Rodolphe Le Targat³, Hector Alvarez-Martinez⁵, Dan Xu⁴, Paul-Eric Pottie³
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11:10	5256	Towards an Active Frequency Reference Driven by a Thermal Beam of 88Sr Atoms...N/A
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Francesca Fama¹, Camila Beli Silva¹, Sheng Zhou¹, Mikkel Tang², Stefan Alaric Schaffer¹, Shayne Bennetts¹, Florian Schreck¹
¹University of Amsterdam, Netherlands, ²University of Copenhagen, Denmark

11:30	5031	Constraining Variations in Fundamental Constants Using a Network of Clocks...N/A
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Adam Parsons², Marco Schioppo², Jacob Tunesi², Ian Hill², Billy Robertson², Alexandra Tofful², Richard Hendricks², Anne Curtis², R.C. Thompson¹, Krzysztof Szymaniec², Helen S. Margolis², Rachel Godun²
¹Imperial College London, United Kingdom, ²National Physical Laboratory, United Kingdom

11:50	5247	New Absolute Frequency Measurement of the Improved ¹⁷¹ Yb Optical Lattice Clock at INRiM...N/A
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Irene Goti³, Stefano Conidio², Matias Risaro¹, Cecilia Clivati¹, Michele Gozzelino¹, Giovanni A. Costanzo³, Filippo Levi¹, Marco Pizzocaro¹, Davide Calonico¹
¹INRiM - Istituto Nazionale di Ricerca Metrologica, Italy, ²INRiM - Istituto Nazionale di Ricerca Metrologica / Politecnico di Torino, Italy, ³INRiM - Istituto Nazionale di Ricerca Metrologica and Politecnico di Torino, Italy

Session B2L-3 - 26/04 10:50 - 12:30

G5: Optical Timebases & Applications

Location: Room 3

Session chair: Dirk Piester, PTB

10:50	5080	Benefit of Optical Clocks for Geodesy...N/A
Jurgen Muller Leibniz University Hannover, Germany		

11:30	5192	Reassessment of Lab-Side Uncertainties for High-Precision Optical Clock Contributions to Tai...N/A
Nils Nemitz, Hidekazu Hachisu, Nozomi Ohtsubo, Hiroyuki Ito, Tetsuya Ido National Institute of Information and Communications Technology, Japan		

11:50	5213	Testing a Robust Algorithm for Optical Time Scales Generation...N/A
Valerio Formichella ¹ , Giovanna Signorile ¹ , Marco Pizzocaro ¹ , Irene Goti ³ , Stefano Condio ² , Cecilia Clivati ¹ , Matias Risaro ¹ , Filippo Levi ¹ , Davide Calonico ¹ , Ilaria Sesia ¹ , Lorenzo Galleani ⁴ ¹ INRiM - Istituto Nazionale di Ricerca Metrologica, Italy, ² INRiM - Istituto Nazionale di Ricerca Metrologica / Politecnico di Torino, Italy, ³ INRiM - Istituto Nazionale di Ricerca Metrologica and Politecnico di Torino, Italy, ⁴ Politecnico di Torino, Italy		

Session B3L-1 – 26/04 14:00 – 16:00

G2: MEMS, OCXO & Frequency Divider

Location: Room 1

Session chair: Magnus Danielson, Net Insight

14:00	5248	Design Challenges for MEMS Resonator-Based High Performance Oscillators in Commercial Applications...N/A
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John Clark, Pierre Guebels, Andrew R. Brown, Seungbae Lee, Wanling Pan
Microchip, United States

14:40	5276	Time-Temperature Superposition Based Accelerated Aging Method for Packaged MEMS Resonators...253
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Jeronimo Segovia-Fernandez, Yutaka Suzuki, Mahmud Chowdhury, Javier Rojas, Ernest Yen
Texas Instruments, United States

15:00	5277	A Thermal-Stress FEM to Predict Aging in Packaged MEMS Resonators...257
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Jeronimo Segovia-Fernandez, Yutaka Suzuki, Mahmud Chowdhury, Javier Rojas, Ernest Yen
Texas Instruments, United States

15:20	5177	30 GHz Regenerative Frequency Divide-by-3...260
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Archita Hati¹, Marco Pomponio², Connor Humiston², John Lettang², Craig Nelson¹
¹National Institute of Standards and Technology, United States, ²National Institute of Standards and Technology and University of Colorado Boulder, Italy, ²National Institute of Standards and Technology and University of Colorado Boulder, United States

15:40	5185	Ultra-Stable Oscillator Stabilization Using an Artificial Neural Network...264
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Olukayode Okusaga², John Hamilton², Trey Schmidt¹, Samuel Reynolds², Jefferey Garstecki², Gregory Weaver²
¹Johns Hopkins APL, United States, ²Johns Hopkins Applied Physics Laboratory, United States

Session B3L-2 – 26/04 14:00 – 16:00

G6: Combs

Location: Room 2

Session chair: Tara Fortier, NIST

14:00	5023	Transfer Oscillator Technique for Generation of 10 GHz Low-Noise Microwaves with High Accuracy...N/A
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Nicholas Nardelli², Tara Fortier¹, Marco Pomponio², Esther Baumann², Craig Nelson¹, Thomas Schibli², Archita Hati¹

¹National Institute of Standards and Technology, United States, ²National Institute of Standards and Technology and University of Colorado Boulder, United States

14:40	5183	Broadband Nonlinear Wavelength Conversion with Integrated Microresonators...266
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Jennifer Black¹, Su-Peng Yu², Zachary Newman², David Carlson², Jizhao Zang¹, Scott Papp¹

¹National Institute of Standards and Technology, United States, ²NIST, United States

15:00	5161	300 GHz Wave Generated with a Dissipative Kerr Soliton Divider...N/A
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Antoine Rolland
IMRA America, Inc., United States

15:20	5126	Shaped Supercontinuum for Precision Frequency Transfer...270
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Kevin Lee, Antoine Rolland, Peng Li, Jie Jiang, Martin Fermann
IMRA America, Inc., United States

15:40	5104	Response Function of Homodyne Wavelength Difference Stabilization...272
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James Cahill³, Tanvir Mahmood¹, Patrick Sykes³, Curtis Menyuk², Weimin Zhou³

¹CCDC ARL, United States, ²UMBC, United States, ³US CCDC Army Research Laboratory, United States

Session B3L-3 – 26/04 14:00 – 16:00

G5: Optical Time Transfer I

Location: Room 3

Session chair: Anne Amy Klein, LPL

14:00	5036	Photon Efficient Optical Time Transfer...N/A
Emily Caldwell ¹ , Laura Sinclair ¹ , William Swann ¹ , Nate Newbury ¹ , Benjamin Stuhl ³ , Jean-Daniel Deschênes ²		
¹ National Institute of Standards and Technology, United States, ² Octosig Consulting, United States, ³ Space Dynamics Laboratory, National Institute of Standards and Technology, United States		
14:40	5060	Free Space Optical Link for Frequency Comparison and Chronometric Geodesy...N/A
Nicolas Maron ² , Francois-Xavi Esnault ¹ , Thomas Leveque ¹ , Peter Wolf ²		
¹ Centre National d'Études Spatiales, France, ² LNE-SYRTE, Observatoire de Paris - Université PSL, CNRS, Sorbonne Université, France		
15:00	5279	Estimation Architectures for Precise Time and Frequency Transfer in a LEO Constellation...274
Christopher Flood ² , Penina Axelrad ² , Andrew J. Metcalf ¹ , Benjamin K. Stuhl ¹		
¹ Air Force Research Lab, United States, ² University of Colorado Boulder, United States		
15:20	5157	How to Implement Mutual Network Synchronization in the Presence of Large Cross-Coupling Delays...279
Lucas Wetzel ¹ , Dimitrios Prousalis ¹ , Rabia Riaz ² , Christian Hoyer ² , Niko Joram ² , Frank Ellinger ² , Frank Julicher ¹		
¹ Max Planck Institute for the Physics of Complex Systems, Germany, ² Technische Universität Dresden, Germany		
15:40	5154	Wireless PTP Transmission with FWA Technology...N/A
Marco Sellone ² , Filippo Levi ² , Alberto Mura ² , Davide Calonico ² , Stefano Zanolli ¹ , Gabriele Balzano ¹		
¹ HAL Service, Italy, ² INRiM - Istituto Nazionale di Ricerca Metrologica, Italy		

Session B4L-1 – 26/04 16:20 – 18:00

G1/4 Joint

Location: Room 1

Session chair: Valentina Zega, Politecnico di Milano, Italy

16:20	5169	Microwave-Optical Transduction Using High Overtone Bulk Acoustic Resonances...N/A
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Terence Blesin¹, Anat Siddharth¹, Hao Tian², Rui Ning Wang¹, Alaina Attanasio², Sunil Bhave², Tobias Kippenberg¹

¹École Polytechnique Fédérale de Lausanne, Switzerland, ²Purdue University, United States

16:40	5284	Self-Aligned Single-Electrode Actuation of Tangential and Wineglass Modes...N/A
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Ozan Erturk³, Sunil Bhave³, Kilian Shambaugh², Sang-Goo Lee¹

¹iBule Photonics, Korea, ²Polytec Inc., United States, ³Purdue University, United States

17:00	5283	AlScN-on-SiC Thin-Film Micromachined Resonant Transducers Operating in High-Temperature Environment Up to 600°C...N/A
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Wen Sui², Haoran Wang², Jaesung Lee², Afzaal Qamar³, Mina Rais-Zadeh¹, Philip X.-L. Feng²

¹NASA Jet Propulsion Laboratory, California Institute of Technology, United States,

²University of Florida, United States, ³University of Michigan Ann Arbor, United States

17:20	5172	Multi-Level Analog Programmable Graphene Resistive Memory with Fractional Channel Ferroelectric Switching in Hafnium Zirconium Oxide...283
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Ved Gund, Benyamin Davaji, Shubham Jadhav, Hyunjea Lee, Debdeep Jena, Huili Grace Xing, Amit Lal

Cornell University, United States

17:40	5295	Turnover Temperature in Lateral-Field-Excited Thin-Film Lithium Tantalate Contour Resonators...287
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Yasaman Majd, Hamideh Kermani, Parvin Akhkandi, Garrett Goodale, Reza Abdolvand
University of Central Florida, United States

Session B4L-2 – 26/04 16:20 – 18:00

G6: Clocks & Combs

Location: Room 2

Session chair: Tanja Mehlstaeubler, PTB

16:20	5302	Simple Millimeter Wave Generation with Stability Tied to a Self-Referenced Frequency Comb...N/A
Alexander Lind ² , Eugene Tsao ³ , Franklyn Quinlan ¹ , Scott Diddams ² ¹ National Institute of Standards and Technology, United States, ² National Institute of Standards and Technology and University of Colorado, Boulder, United States, ³ NIST, United States		
16:40	5202	Quantum Nondemolition Detection for Strontium Optical Lattice Clock...291
Haosen Shang, Miguel-Angel Cifuentes Marin, Yannick Foucault, Rodolphe Le Targat, Jerome Lodewyck LNE-SYRTE, Observatoire de Paris - Université PSL, CNRS, Sorbonne Université, France		
17:00	5255	Advancing Optical Lattice Clock Performance with Enhanced Quantum Control Techniques...N/A
Chun-Chia Chen ¹ , Jacob Siegel ¹ , Xiaogang Zhang ¹ , William McGrew ¹ , Youssef Hassan ¹ , Kyle Beloy ¹ , Andrew Ludlow ² ¹ National Institute of Standards and Technology, United States, ² National Institute of Standards and Technology and University of Colorado Boulder, United States		
17:20	5303	Tweezer Clocks: A New Platform for Quantum Metrology...N/A
Adam Kaufman JILA, National Institute of Standards and Technology and University of Colorado Boulder, United States		

Session B4L-3 – 26/04 16:20 – 18:00

G3: Timekeeping Clocks

Location: Room 3

Session chair: François-Xavier Esnault, CNES

16:20	5146	Cold-Atom-Based Commercial Microwave Clocks at 1×10^{-15} Relative Instability Over More Than a Month...294
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Bruno Pelle¹, Luc Archambault¹, Bruno Desruelle¹, Arnaud Landragin²
¹iXblue, France, ²SYRTE, Observatoire de Paris, France

17:00	5050	Normalised Detection of Clock States by Cold Atom Recapture Method...298
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Samuel Walby³, Martin Knapp³, Josh Whale¹, Andrew Wilson¹, Richard Hendricks¹,
Christopher Foot², Krzysztof Szymaniec¹
¹National Physical Laboratory, United Kingdom, ²University of Oxford, United Kingdom,
³University of Oxford / National Physical Laboratory, United Kingdom

17:20	5262	Reevaluating the Collisional Shift of the NRC-FCs2 Primary Frequency Standard...N/A
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Scott Beattie, Bin Jian, Marina Gertsolf
National Research Council Canada, Canada

Session CIL-1 – 27/04 08:40 – 10:20

G3: Cell Standards

Location: Room 1

Session chair: Gaetano Mileti, Université de Neuchatel

08:40	5035	LaLI-POP: Lamp and Laser Integrated Pulsed-Optically Pumped Atomic Clock...301
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Michael Huang, Arielle Little, James Camparo
Aerospace Corporation, United States

09:00	5168	Multipole Moments of the CPT Density Matrix in Polarization Modulation Conditions...305
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Zachary Warren, James Camparo
Aerospace Corporation, United States

09:20	5110	Frequency-Doubled Laser System at 780 nm for Pulsed Vapor-Cell Clocks...309
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Michele Gozzelino, Salvatore Micalizio, Elio Bertacco, Filippo Levi, Claudio Calosso
INRiM - Istituto Nazionale di Ricerca Metrologica, Italy

09:40	5121	Versatile Microfabricated Alkali Vapor Cells Using Local Sealing...N/A
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Vincent Maurice⁵, Clement Carle², Shervin Keshavarzi², Ravinder Chutani⁴, Samuel Queste², Ludovic Gauthier-Manuel¹, Jean-Marc Cote², Remy Vicarini¹, Rodolphe Boudot³, Nicolas Passilly²

¹FEMTO-ST, France, ²FEMTO-ST Institute, France, ³FEMTO-ST Institute, CNRS, France, ⁴IEMN, France, ⁵IEMN - Centrale Lille, France

10:00	5176	New Approaches for Cost Reduction in Microfabricated Atomic Clocks...N/A
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Motoaki Hara¹, Yuichiro Yano¹, Satoshi Shinada¹, Zhijian Zhao², Masaya Toda², Hiroyuki Ito³, Takahito Ono², Tetsuya Ido¹

¹National Institute of Information and Communications Technology, Japan, ²Tohoku University, Japan, ³Tokyo Institute of Technology, Japan

Session CIL-2 – 27/04 08:40 – 10:20

G6: Techniques & Theory

Location: Room 2

Session chair: Murray Barrett, NUS

08:40	5195	Low-Noise Near-Ultraviolet Photonic Integrated Lasers...N/A
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Anat Siddharth¹, Thomas Wunderer², Grigory Lihachev¹, Andrey Voloshin¹, Camille Haller¹, Rui Ning Wang¹, Marke Teepe², Zhihong Yang², Junqiu Liu¹, Johann Riemensberger¹, Nicolas Grandjean¹, Noble Johnson², Tobias Kippenberg¹

¹École Polytechnique Fédérale de Lausanne, Switzerland, ²Palo Alto Research Center, United States

09:00	5209	Towards the Development of a Compact-Monolithic Iodine Frequency Stabilized Laser Setup for Ground Tests of LISA Payload...N/A
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Alexis Mehlman⁴, David Holleville², Michel Lours³, Rodolphe Le Targat³, Sébastien Bize³, Ouali Acef³, Aurelien Boutin¹, Karine Lepage¹, Ludovic Fulop¹

¹iXblue, France, ²LNE-SYRTE, Observatoire de Paris, France, ³LNE-SYRTE, Observatoire de Paris - Université PSL, CNRS, Sorbonne Université, France, ⁴SYRTE Laboratory, Observatoire de Paris/iXblue, France

09:20	5144	Improving the Signal/Noise Ratio on Optical Comb-Based Frequency Measurements Using a Track&Hold Amplifier...N/A
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Matias Risaro², Paolo Savio¹, Davide Calonico², Filippo Levi², Cecilia Clivati²

¹Fondazione LINKS, Italy, ²INRiM - Istituto Nazionale di Ricerca Metrologica, Italy

09:40	5040	Atomic Structure Calculations for the Intercombination and Clock Levels in Hg and Cd...N/A
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Jesse Schelfhout, John McFerran
University of Western Australia, Australia

10:00	5218	Spectroscopic Effects Nonlinear in Atomic Density Caused by the Free Motion of Atoms in a Gas...312
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Valeriy Yudin², Alexey Taichenachev¹, Maksim Basalae³, Oleg Prudnikov², Sergey Bagayev¹

¹Institute of Laser Physics SB RAS, Russia, ²Institute of Laser Physics, Novosibirsk State University, Russia, ³Novosibirsk State University, Russia

Session CIL-3 – 27/04 08:40 – 10:20

G5: Traceability & the SI Second

Location: Room 3

Session chair: Per Olof Hedekvist, RISE

08:40	5304	Roadmap Towards the Redefinition of the Si Second...N/A
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Noel Dimarcq

CNRS -Université Cote d'Azur - Observatoire Cote d'Azur, France

09:20	5113	Current Activity of the Consultative Committee for Time and Frequency to Address the Needs of Time and Frequency Metrology and its Applications...N/A
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Noel Dimarcq², Patrizia Tavella¹

¹BIPM Bureau International des Poids et Mesures, France, ²CNRS -Université Cote d'Azur -Observatoire Cote d'Azur, France

09:40	5088	Traceability to UTC from GNSS Measurements...N/A
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Pascale Defraigne⁵, Pierre Uhrich¹, Joseph Achkar¹, Andreas Bauch⁴, Judah Levine², Michael Wouters³

¹LNE-SYRTE, Observatoire de Paris - Université PSL, CNRS, Sorbonne Université, France,

²National Institute of Standards and Technology, United States, ³National Measurement Institute, Australia, ⁴Physikalisch-Technische Bundesanstalt, Germany, ⁵Royal Observatory of Belgium, Belgium

10:00	5136	Selected Aspects of Traceability and Uncertainty of Frequency Measurements with Counters...315
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Dirk Piester, Egle Staliuniene, Andreas Bauch

Physikalisch-Technische Bundesanstalt, Germany

Session C2L-1 – 27/04 10:50 – 12:30

G3: Fundamental Physics & Precision Metrology

Location: Room 1

Session chair: Sebastien Bize, SYRTE

10:50	5305	Long-Lived Spin Squeezing in a Metrologically Relevant Regime...N/A
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Jose Alberto De La Paz Espinosa², Carlos Leonardo Garrido Alzar², Meng-Zi Huang¹, Alice Sinatra¹, Jakob Reichel¹

¹ENS-Université PSL, CNRS, Sorbonne Université, France, ²LNE-SYRTE, Observatoire de Paris - Université PSL, CNRS, Sorbonne Université, France

11:30	5244	Test of the Sagnac Effect by Accurate Measurements with a Dual-Axis Cold-Atom Gyroscope...N/A
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Mohamed Guessoum³, Romain Gautier², Quentin Bouton², Leonid Sidorenkov¹, Arnaud Landragin⁴, Remi Geiger²

¹LNE-SYRTE, Observatoire de Paris - Université PSL, CNRS, Sorbonne Université, France, ²SYRTE, France, ³SYRTE - Observatoire de Paris, France, ⁴SYRTE, Observatoire de Paris, France

11:50	5147	Ultra-High Precision Laser Spectroscopy of Antihydrogen...N/A
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Janko Nauta

Swansea University, United Kingdom

12:10	5297	Precision Metrology with Photons, Phonons and Spins...N/A
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Michael Tobar, Jeremy Bourhill, William Campbell, Elrina Hartman, Eugene Ivanov, Maxim Goryachev, Benjamin McAllister, Aaron Quiskamp, Catriona Thomson, Alexey Veryaskin, Zijun Zhao

University of Western Australia, Australia

Session C2L-2 – 27/04 10:50 – 12:30

G4: Resonant Sensors & Energy Harvesters

Location: Room 2

Session chair: Jérôme Juillard, CentraleSupélec

10:50	5063	H2MEMS Project: Resonant MEMS for Detection of Hydrogen Release in Radioactive Waste Disposal Facility...317
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Isabelle Dufour⁴, Luis Iglesias Hernandez⁴, Priyadarshini Shanmugam⁵, Jean-Francois Michaud⁵, Laurent Colin⁵, Daniel Alquier⁵, Dominique Certon⁵, Maria-Dolores Manrique-Juarez³, Thierry Leichle³, Fabrice Mathieu³, Laurent Mazaenq³, Liviu Nicu³, Luan Nguyen², Sébastien Chenot², Marc Portail², Johan Bertrand¹

¹Andra, France, ²CNRS-CRHEA, France, ³CNRS-LAAS, France, ⁴Université de Bordeaux, France, ⁵Université de Tours, France

11:30	5138	Electrostatic Frequency Tuning of a Quatrefoil Suspension Gyroscope...319
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Madan Parajuli², Guillermo Sobreviela¹, Ashwin Seshia²

¹Silicon Microgravity, United Kingdom, ²University of Cambridge, United Kingdom

11:50	5249	A Highly Sensitive Magnetic Field SAW Sensor on Metglas...323
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Prince Mengue¹, Omar Elmazria¹, Baptiste Paulmier¹, Anna Maria Friedel¹, Sebastien Petit-Watelot¹, Thomas Hauet¹, Sergei Zhgoon², Daniel Lacour¹, Michel Hehn¹, Sami Hage-Ali¹

¹Institut Jean Lamour, France, ²National Research University "MPEI", Russia

12:10	5134	Planar Grin Lenses for MEMS Energy Harvesters: Macroscale Proof of Concept...325
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Valentina Zega, Marco Antonacci, Attilio Frangi, Alberto Corigliano, Emanuele Riva Politecnico di Milano, Italy

Session C2L-3 – 27/04 10:50 – 12:30

G5: Optical Time Transfer II

Location: Room 3

Session chair: Laura Sinclair, NIST

10:50	5197	One Year of WR Link Operation Between Two UTC(k)...N/A
Pierre Waller ¹ , Cedric Plantard ¹ , Erik Dierikx ² , Yan Xie ² ¹ ESA/ESTEC, Netherlands, ² VSL, Netherlands		
11:10	5100	Fiber Optic Time Transfer from UTC(k) to a VLBI Antenna in a Coherent Communication Network...329
Per Olof Hedekvist ¹ , Sven-Christian Ebenhag ¹ , Carsten Rieck ¹ , Magnus Bergroth ² ¹ RISE Research Institutes of Sweden AB, Sweden, ² SUNET, Sweden		
11:30	5120	A Pulsed-Optical Frequency and Timing Distribution System for Deep Space Antennas...N/A
Kemal Shafak ¹ , Anan Dai ¹ , Franz. X. Kaertner ¹ , Benjamin Rudin ⁴ , Florian Emaury ⁴ , Oliver Lange ³ , Werner Lange ³ , Sinda Mejri ² ¹ Cycle GmbH, Germany, ² European Space Agency, Germany, ³ Lange-Electronic GmbH, Germany, ⁴ Menhir Photonics AG, Switzerland		
11:50	5242	Long Distance Free Space Optical Time and Frequency Transfer: Towards Satellite-Ground Link at 10-18 Instability...N/A
Qi Shen ² , Jian-Yu Guan ² , Lei Hou ² , Ting Zeng ² , Min Li ² , Jin-Jian Han ² , Meng-Zhe Lian ² , Yan-Wei Chen ² , Yuan Cao ² , Zhao-Hui Li ¹ , Jin-Cai Wu ¹ , Jian-Jun Jia ¹ , Sheng-Kai Liao ² , Ji-Gang Ren ² , Juan Yin ² , Cheng-Zhi Peng ² , Haifeng Jiang ³ , Qiang Zhang ² , Jian-Wei Pan ² ¹ Key Laboratory of Space Active Opto-Electronic Technology, Shanghai Institute of Technical Physics, China, ² University of Science and Technology of China, China, ³ University of Science and Technology of China, National Time Service Center, CAS, China		

Session C3L-1 – 27/04 14:00 – 16:00

G1: Aluminum Scandium Nitride Devices

Location: Room 1

Session chair: Azadeh Ansari, Georgia Institute of Technology

14:00	5159	X-Band Multi-Frequency 30% Compound ScAlN Microacoustic Resonators and Filters for 5G-Advanced and 6G Applications...333
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Gabriel Giribaldi, Michele Pirro, Bernard Herrera Soukup, Meruyert Assylbekova, Giuseppe Michetti, Luca Colombo, Matthew Conte, Matteo Rinaldi
Northeastern University, United States

14:20	5289	Frequency Reprogrammable Al _{0.7} Sc _{0.3} N Acoustic Delay Line with Up to 13.5 % Bandwidth...337
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Onurcan Kaya, Xuanyi Zhao, Cristian Cassella
Northeastern University, United States

14:40	5184	High-Performance SAW Resonators at 3 GHz Using AlScN on a 4H-SiC Substrate...341
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Xingyu Du, Zichen Tang, Chloe Leblanc, Deep Jariwala, Roy H. Olsson III
University of Pennsylvania, United States

15:00	5156	Improving Thermal Linearity and Quality Factor of Al ₇₂ Sc ₂₈ N Contour Mode Resonators Using Acoustic Metamaterials Based Lateral Anchors...343
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Xuanyi Zhao, Onurcan Kaya, Michele Pirro, Sungho Kang, Cristian Cassella
Northeastern University, United States

15:20	5291	A 7 GHz – 13.4 GHz Complementary-Switchable Thickness-Extensional Bulk Acoustic Resonator Using Laminated Ferroelectric Sc _{0.28} Al _{0.72} N...N/A
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Dicheng Mo, Shaurya Dabas, Sushant Rassay, Roozbeh Tabrizian
University of Florida, United States

15:40	5281	Intrinsically Tunable Laminated Ferroelectric Sc _{0.28} Al _{0.72} N Extensional Resonator Based on Local Polarization Switching...N/A
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Shaurya Dabas, Dicheng Mo, Sushant Rassay, Roozbeh Tabrizian
University of Florida, United States

Session C3L-2 – 27/04 14:00 – 16:00

G6: Clocks II

Location: Room 2

Session chair: Uwe Sterr, PTB

14:00	5158	Optical Frequency Ratios Between a Highly Charged Ion Clock and a $^{171}\text{Yb}^+$ Clock...N/A
Steven King ² , Lukas Spiess ² , Alexander Wilzewski ² , Peter Micke ² , Tobias Leopold ² , Erik Benkler ² , Richard Lange ² , Nils Huntemann ² , Piet Schmidt ³ , Jose Crespo Lopez-Urrutia ¹ ¹ Max-Planck-Institut für Kernphysik, Germany, ² Physikalisch-Technische Bundesanstalt, Germany, ³ Physikalisch-Technische Bundesanstalt and Leibniz Universität Hannover, Germany		
14:40	5245	First Measurements with a Portable Yb Optical Lattice Clock...N/A
Wesley Brand, Robert Fasano, Yun-Jhih Chen, Richard Fox, Andrew Ludlow National Institute of Standards and Technology and University of Colorado Boulder, United States		
15:00	5288	Compact and Portable Cavity-Stabilized Laser with Broadband EOM Feedback for Low Phase Noise...N/A
Megan Kelleher ³ , Charles McLemore ³ , Dahyeon Lee ³ , Scott Diddams ² , Franklyn Quinlan ¹ ¹ National Institute of Standards and Technology, United States, ² National Institute of Standards and Technology and University of Colorado, Boulder, United States, ³ University of Colorado Boulder, United States		
15:20	5164	Two-Color Grating Magneto-Optical Trap for Narrow-Line Laser Cooling...N/A
Saskia Anna Bondza ² , Christian Lisdat ² , Stefanie Kroker ² , Tobias Leopold ¹ ¹ Deutsches Luft- und Raumfahrtzentrum, Germany, ² Physikalisch- Technische Bundesanstalt, Germany		
15:40	5054	Absolute Frequency Measurement of the Sr^+ Ion Optical Clock with a Fourfold Uncertainty Reduction...346
Pierre Dubé, Bin Jian, Marina Gertsyolf National Research Council Canada, Canada		

Session C3L-3 – 27/04 14:00 – 16:00

G3: Chip-scale Atomic Clocks

Location: Room 3

Session chair: John Kitching, NIST

14:00	5011	Chip Scale Rubidium Oscillator for Space Application...N/A
Serge Grop ² , Jacques Haesler ¹ , Joseph Gouloumet ² , Sylvain Karlen ¹ , Davide Grassani ¹ , Vito Genna ² , Christian Schori ² , Laurent Balet ¹ , Benjamin Gallinet ¹ , Fabien Droz ¹ , Steve Lecomte ¹		
¹ CSEM SA, Switzerland, ² Oroliia Switzerland, Switzerland		
14:20	5014	Tackling Light-Shifts in a Microcell Atomic Clock with Symmetric Auto-Balanced Ramsey Sequence...N/A
Clement Carle ¹ , Moustafa Abdel Hafiz ¹ , Nicolas Passilly ¹ , Jean-Marie Danet ⁴ , Claudio Calosso ³ , Rodolphe Boudot ²		
¹ FEMTO-ST Institute, France, ² FEMTO-ST Institute, CNRS, France, ³ INRiM - Istituto Nazionale di Ricerca Metrologica, Italy, ⁴ SYRLINKS, France		
14:40	5119	Adapting a Flat-Form Factor Miniature Atomic Clock to a Commercial Package: Preliminary Characterization...N/A
Davide Grassani ¹ , Laurent Balet ¹ , Olivia Hefti ² , Sylvain Karlen ¹ , Fabien Droz ¹ , Joseph Gouloumet ³ , Serge Grop ³ , Christian Schori ³ , Jacques Haesler ¹ , Steve Lecomte ¹		
¹ CSEM SA, Switzerland, ² CSEM/PSI, Switzerland, ³ Oroliia Switzerland, Switzerland		
15:00	5097	Long-Term Instability of a Pulsed Optically Pumped Micro-Cell Rubidium Frequency Standard...N/A
Etienne Batori ³ , Christoph Affolderbach ³ , Florian Gruet ³ , Matthieu Pellaton ³ , Gaetano Mileti ³ , Yuanyan Su ¹ , Maddalena Violetti ² , Anja K. Skrivervik ¹		
¹ École Polytechnique Fédérale de Lausanne, Switzerland, ² Toscana Life Sciences, école Polytechnique Fédérale de Lausanne, Switzerland, ³ Université de Neuchatel, Switzerland		
15:20	5074	Low Phase Noise Low Power Atomic Clocks...348
Peter Cash, Igor Kosvin, Hoklay Park, Matt Stanczyk, Mike F. Wacker Microchip Technology, United States		

15:40	5151	Miniature Atomic Clock Driven by an Application Specific Integrated Circuit (ASIC)...N/A
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Yves-Julien Regamey, David Ruffieux, Sylvain Karlen, Jacques Haesler, Steve Lecomte
CSEM SA, Switzerland

Session DIL-1 – 28/04 08:40 – 10:20

G1: RF Acoustic Techniques & Devices

Location: Room 1

Session chair: Alexandre Reinhardt, CEA

08:40	5087	Conception of Wide Band Surface Acoustic Waves Filter in L-Band Based on Lithium Niobate Substrate...N/A
Alexandre Clairet ¹ , Thierry Laroche ¹ , Eric Michoulier ¹ , Bruno Lelong ² , Jean-Michel Hodé ² , Florent Bernard ¹ , Emilie Courjon ¹ , Sylvain Ballandras ¹ ¹ FrecIn sys, France, ² Thales DMS, France		
09:00	5058	Self-Excitation in Electrostatically Actuated Non-Identical Coupled Curved Microbeams...353
Lior Medina ¹ , Ashwin Seshia ² ¹ Tel-Aviv University, Israel, ² University of Cambridge, United Kingdom		
09:20	5238	Transverse Mode Suppression Based on Optimized Tilted Transducer for NS-SAW Resonator...356
Shuxian Wu ¹ , Ming Li ³ , Feng Xu ¹ , Feihong Bao ¹ , Gongbin Tang ² , Jie Zou ¹ ¹ Fudan University, China, ² Institute of Novel Semiconductors, Shandong University, China, ³ Shandong University, China		
09:40	5004	Study on the Spurious Modes in FBAR Resonators with Quasi-Free Edges...360
Chin-Yu Chang ¹ , Yan-Ming Huang ¹ , Tzu-Hsuan Hsu ¹ , Yung-Hsiang Chen ² , Rakesh Chand ³ , Yelehanka Pradeep ³ , Yens Ho ² , Ming-Huang Li ¹ , Weileun Fang ¹ , Sheng-Shian Li ¹ ¹ National Tsing Hua University, Taiwan, ² Vanguard International Semiconductor Corporation, Taiwan, ³ Vanguard International Semiconductor Corporation Singapore PTE. Ltd., Singapore		

Session D1L-2 – 28/04 08:40 – 10:20

G3/6 Joint: Ion Clocks

Location: Room 2

Session chair: Rachel Godun, NPL

08:40	5129	An Ensemble of Prototype Yb+ Microwave Ion Clocks...N/A
Daniel Thrasher, Peter Schwindt, Brendan Gunning, Erik Skogan, Ganapathi Subramania, Mary Crawford, Yuan-Yu Jau		
Sandia National Laboratories, United States		

09:00	5122	Evaluation of a Sympathetically Cooled In+ Ion Clock...N/A
Tanja E. Mehlstubler ² , Tabea Nordmann ¹ , Jonas Keller ¹ , Jan Kiethe ¹ , Hartmut Nimrod Hausser ¹ , Leon Schomburg ¹ , Hongli Liu ³ , Nishant Bhatt ¹ , Richard Lange ¹ , Nils Huntemann ¹ , Ekkehard Peik ¹ , Erik Benkler ¹ , Soren Dorscher ¹ , R. Schwarz ¹ , Christian Lisdat ¹		
¹ Physikalisch-Technische Bundesanstalt, Germany, ² Physikalisch-Technische Bundesanstalt and Leibniz Universität Hannover, Germany, ³ PTB Physikalisch-Technische Bundesanstalt, Germany		

09:20	5101	27Al+ Clock at PTB - Recent Improvements on the Error Budget...N/A
Johannes Kramer ⁴ , Fabian Dawel ³ , Marek Hild ² , Steven King ² , Nicolas Spethmann ² , Piet Schmidt ³ , Miroslav Dolezal ¹		
¹ Czech Metrology Institute, Czech Rep., ² Physikalisch-Technische Bundesanstalt, Germany, ³ Physikalisch-Technische Bundesanstalt and Leibniz Universität Hannover, Germany, ⁴ PTB Braunschweig, Germany		

09:40	5165	Tailored Optical Clock Transition in 40Ca+...N/A
Lennart Pelzer ⁴ , Kai Dietze ⁴ , Johannes Kramer ⁴ , Fabian Dawel ⁴ , Ludwig Krinner ⁴ , Nicolas Spethmann ³ , Piet Schmidt ⁴ , Victor Jose Martinez-Lahuerta ² , Klemens Hammerer ² , Nati Aharon ¹ , Alex Retzker ¹		
¹ Hebrew University of Jerusalem, Israel, ² Leibniz Universität Hannover, Germany, ³ Physikalisch-Technische Bundesanstalt, Germany, ⁴ Physikalisch-Technische Bundesanstalt and Leibniz Universität Hannover, Germany		

10:00	5030	A High-Performance Sympathetically-Cooled Cd+ Microwave Frequency Standard...N/A
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Haoran Qin, Jize Han, Nongchao Xin, Shengnan Miao, Yiting Chen, Jianwei Zhang, Lijun Wang
Tsinghua University, China

Session DIL-3 – 28/04 08:40 – 10:20

G5: Timescales

Location: Room 3

Session chair: Gerard Petit, Time Department, BIPM

08:40	5069	A New Way to Set the Maximum Weight in the Weighting Algorithm of UTC...363
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James Milton², Gianna Panfilo¹

¹BIPM Bureau International des Poids et Mesures, France, ²University of Edinburgh, United Kingdom

09:00	5099	Improvements to the UTC(NPL) Steering Protocol – On-Demand Estimation of Time Offset from UTC...N/A
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Josh Whale, Richard Hendricks, Adam Peverell, Krzysztof Szymaniec, Peter Whibberley, Conway Langham, Elizabeth Laier English
National Physical Laboratory, United Kingdom

09:20	5171	Design of a Robust and Precise Timing Facility for the European Navigation Satellite System...N/A
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Johann Furthner, Laura Agazzi, Pia Kindl, Thomas Schilling, Markus Schmitt
German Aerospace Center (DLR), Germany

09:40	5076	A Total Imputation Algorithm That Fills Gaps in Time Series Measurements for ADEV and Phase Noise Characterizations of Power-Law Noise Models...365
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David Howe¹, Chloe Champagne², Noah Schlossberger³

¹National Institute of Standards and Technology and University of Colorado Boulder, United States, ²Naval Research Lab, Wash DC, United States, ³University of Colorado Boulder, United States

10:00	5212	Mixing UTCr and Cesium Fountain Measurements for the Generation of UTC(IT)...367
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Valerio Formichella¹, Giovanna Signorile¹, Tung Than Thai¹, Michele Gozzelino¹, Ilaria Sesia¹, Filippo Levi¹, Giovanni A. Costanzo²

¹INRiM – Istituto Nazionale di Ricerca Metrologica, Italy, ²INRiM – Istituto Nazionale di Ricerca Metrologica and Politecnico di Torino, Italy

Session D2L-1 – 28/04 10:50 – 12:30

G2: Oscillators & Measurements

Location: Room 1

Session chair: Enrico Rubiola, FEMTO-ST, Besançon

10:50	5225	Photonic Microwave Generator as Quantum-Enabled Local Oscillator for Radars...N/A
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Maximilian Bradler¹, Maurice Lessing¹, Benjamin Sprenger¹, Marc Fischer¹, Michele Giunta¹, Ronald Holzwarth¹, Jonathan M. Jones², Darren Griffiths², Jithin Kannanthara², Mike Antoniou², Chris Baker², Mohammed Jahangir², Yeshpal Singh², Kai Bongs²
¹Menlo Systems GmbH, Germany, ²University of Birmingham, United Kingdom

11:30	5200	Miniaturized High-Reliability Lasers for Quantum Technologies...N/A
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Rachel Cannon², Sean Dyer³, Erling Riis³, James McGilligan³, Paul Griffin³, Douglas Bremner¹, Una Marvet¹
¹Alter Technology TÜV Nord UK Ltd, United Kingdom, ²Alter Technology TÜV Nord UK Ltd/University of Strathclyde, United Kingdom, ³University of Strathclyde, United Kingdom

11:50	5274	The Cool Oscillator Energy-Mode Model for Advanced Performance Analysis and Prediction...371
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Michael Underhill
Underhill Research, United Kingdom

12:10	5230	Comparison Between Cross-Spectrum and Spectrum Average Generalized to Q-Devices...377
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Antoine Baudiquez², Eric Lantz¹, Enrico Rubiola², François Vernotte²
¹Femto-ST, France, ²FEMTO-ST Institute, Italy, ²FEMTO-ST Institute, France

Session D2L-2 – 28/04 10:50 – 12:30

G6: Stable Lasers

Location: Room 2

Session chair: Rodolphe Le Targat, SYRTE

10:50	5096	Noise Contributions in Crystalline Mirror Coatings...379
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Jialiang Yu², Thomas Legero², Fritz Riehle², Chun Yu Ma², Sofia Herbers², Daniele Nicolodi², Dhruv Kedar¹, Eric Oelker³, Jun Ye¹, Uwe Sterr²

¹JILA, NIST and university of Colorado, United States, ²Physikalisch-Technische Bundesanstalt, Germany, ³University of Glasgow, United Kingdom

11:30	5067	Towards a 4×10^{-17} Fractional Frequency Instability Laser Based on a Room Temperature Optical Cavity...N/A
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Marco Schioppo, Jacob Tunesi, Anthony Harwood, Helen S. Margolis
National Physical Laboratory, United Kingdom

11:50	5091	Multi-Spectral Hole Probing for Laser Frequency Stabilization...382
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Michael Hartman³, Shuo Zhang², Xiuji Lin³, Rodolphe Le Targat², Philippe Goldner¹, Bess Fang³, Signe Seidelin⁴, Yann Le Coq²

¹Chimie ParisTech, France, ²LNE-SYRTE, Observatoire de Paris - Université PSL, CNRS, Sorbonne Université, France, ³SYRTE, France, ⁴Université Grenoble Alpes, France

12:10	5214	Ultrastable Laser System for Sr Lattice Clocks...N/A
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Manuel Brekenfeld¹, Benjamin Rauf¹, Sarah Saint-Jalm¹, Maurice Lessing¹, Andreas Fricke¹, Benjamin Sprenger¹, Marc Fischer¹, Michele Giunta¹, Ronald Holzwarth¹, Gar-Wing Truong², Seth B. Catano-Lopez², Garrett D. Cole²

¹Menlo Systems GmbH, Germany, ²Thorlabs Crystalline Solutions, United States

Session D2L-3 – 28/04 10:50 – 12:30

G5: Microwave Satellite Time Transfer

Location: Room 3

Session chair: Pascale Defraigne, ORB

10:50	5070	CNES Accurate Monitoring of GNSS Time Scales Based on Absolute Calibration...N/A
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Jerome Delporte, David Valat
CNES, France

11:10	5117	Continuous IPPP Links for UTC...N/A
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G rard Petit, Frederic Meynadier, Aur lie Harmegnies, Camille Parra
BIPM Bureau International des Poids et Mesures, France

11:30	5049	Inventory of Error Sources Limiting GNSS-Based Frequency Transfer...390
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Ahmed Elmaghraby, Thomas Krawinkel, Steffen Schoen
Leibniz Universit t Hannover, Germany

11:50	5208	Understanding TWSTFT Diurnals...N/A
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Frederic Meynadier¹, Carsten Rieck³, Kenneth Jaldehag²
¹BIPM Bureau International des Poids et Mesures, France, ²RISE, Sweden, ³RISE
Research Institutes of Sweden AB, Sweden

12:10	5034	GNSS Time Transfer Exploiting High-Gain Antennas...N/A
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Esteban Garbin³, Ricardo Piriz³, Francisco Gonzalez¹, Erik Schoenemann¹, Daniel Garcia⁴,
Cedric Plantard¹, Florian Reckeweg¹, Pierre Waller²
¹ESA, Netherlands, ¹ESA, Germany, ²ESA/ESTEC, Netherlands, ³GMV, Spain, ⁴Prodetel,
Spain