

Monday, 12 April 2010

17:30 Pre-registration and Welcome Drink

Tuesday, 13 April 2010

09:00 Welcome and Introduction

09:15 Invited Plenary Presentation

Present and future impact of GNSS spaceborne scientific applications, in particular on orbit and gravity field determination

Beutler, Gerhard¹; Hugentobler, Urs²; Jaeggi, Adrian¹;

¹*Astronomical Institute, University of Bern (SWITZERLAND);*

²*Institute For Astronomical and Physical Geodesy, Technical University of Munich (GERMANY)*

10:00 Overview of Time and Frequency Applications in ESA Missions
ESA

10:40 Coffee break

Session 1 - Materials and Resonators

11:20 New Investigations on the LGT Crystal Intended for Frequency and Time Applications
Boy, Jean-Jacques¹; Nguyen Thi Kim, Ngan²; Devautour-Vinot, Sabine³; Frayret, Jérôme⁴

¹*FEMTO-ST Institute (FRANCE);* ²*Frequency and Time Dpt, Femto-st Institute, Besancon (FRANCE);* ³*Charles Gerhardt Institute, University of Montpellier (FRANCE);* ⁴*LCABIE, Université de Pau et des Pays de l'Adour (FRANCE)*

11:40 Role of Alkali Ions in the Radiation Sensitivity of the Quartz Crystal
Lefèvre, Jérémie¹; Cambon, Olivier¹; Devautour-Vinot, Sabine¹; Guibert, Pierre²; Frayret, Jérôme³; Boy, Jean-Jacques⁴; Picchedda, Delphine⁵; Cibiel, Gilles⁶
¹*Institut Charles Gerhardt (FRANCE);* ²*IRAMAT (FRANCE);* ³*LCABIE (FRANCE);* ⁴*FEMTO-ST (FRANCE);* ⁵*GEMMA Quartz & Crystal (FRANCE);* ⁶*CNES (FRANCE)*

12:00 Analyzes of Very High Q Quartz Crystal Aimed to High Quality 5 MHz Resonators Achievement
Imbaud, Joël¹; Boy, Jean Jacques¹; Picchedda, Delphine²; Cibiel, Gilles³; Sthal, Fabrice¹
¹*FEMTO-ST Institute (FRANCE);* ²*Gemma (FRANCE);* ³*CNES (FRANCE)*

12:20 Compact Optoelectronic Oscillator with Minidisk Resonator
Salzenstein, Patrice¹; Volyanskiy, Kirill²; Pogumerskiy, Maxim³; Tavernier, Hervé¹; Rubiola, Enrico¹; Larger, Laurent¹
¹*CNRS - FEMTO-ST (FRANCE);* ²*SUAI (RUSSIAN FEDERATION);* ³*ITMO (RUSSIAN FEDERATION)*

- 12:40 Oscillator Phase Noise Optimization and Correction
Goryachev, Maxim ; Galliou, Serge ; Abbe, Philippe
FEMTO-ST Institute (FRANCE)

Session 2 - Cold Atom Clocks

- 11:20 Invited Presentation - Measurement of the Rb Ground State Hyperfine Splitting with Atomic Fountains
Ovchinnikov, Yuri ; Szymaniec, Krzysztof ; Marra, Giuseppe
National Physical Laboratory (UNITED KINGDOM)
- 12:00 Uncertainty Evaluation and Recent Improvements of the Fountain Primary Frequency Standard CSF2 at PTB
Gerginov, Vladislav ; Nemitz, Nils ; Griebisch, Dieter ; Kazda, Michael ; Wynands, Robert ; Weyers, Stefan
Physikalisch-Technische Bundesanstalt (GERMANY)
- 12:20 Characterization of the Distributed Cavity Phase Shift in FO2 for Improving the Accuracy of SYRTE Fountain Clocks
Guéna, Jocelyne¹ ; Abgrall, Michel¹ ; Rovera, Daniele¹ ; Rosenbusch, Peter¹ ; Santarelli, Giorgio¹ ; Tobar, Michael E.² ; Laurent, Philippe¹ ; Gibble, Kurt³ ; Bize, Sébastien¹ ; Clairon, André¹
¹SYRTE, Observatoire de Paris (FRANCE); ²University of Western Australia (AUSTRALIA); ³Pennstate University (UNITED STATES)
- 12:40 Dick Effect and Long Term Stability Evaluation of HORACE Compact Cold Atom Clock
Rossetto, Nicolas¹ ; Chapelet, Frederic¹ ; Esnault, Francois-Xavier¹ ; Lambert, Raphael¹ ; Lours, Michel¹ ; Holleville, David¹ ; Dimarcq, Noel¹ ; Delporte, Jerome²
¹SYRTE - Observatoire de Paris - CNRS (FRANCE); ²CNES (FRANCE)
- 13:00 Lunch break

Session 3 - GNSS Timing I

- 14:00 Long-term Performances of GIOVE On-board Clocks
Waller, Pierre¹ ; Gonzalez, Francisco¹ ; Binda, Stefano¹ ; Hidalgo, Irene² ; Tobias, Guillermo² ; Sesia, Ilaria³ ; Cernigliaro, Alice³ ; Tavella, Patrizia³
¹ESA (NETHERLANDS); ²GMV (SPAIN); ³INRiM (ITALY)
- 14:20 Evaluation of GIOVE Satellite Clocks using the CONGO Network
Hugentobler, Urs¹ ; Steigenberger, Peter¹ ; Montenbruck, Oliver² ; Hauschild, Andre² ; Weber, Georg³ ; Hessels, Uwe³
¹Technische Universitaet Muenchen (GERMANY); ²German Aerospace Center (GERMANY); ³Federal Agency for Cartography and Geodesy (GERMANY)
- 14:40 Clock Prediction Experimentation with GIOVE Clocks
Gonzalez, Francisco¹ ; Cernigliaro, Alice² ; Patrizia, Tavella²
¹ESA (NETHERLANDS); ²INRiM (ITALY)

15:00 Galileo Common View: Format, Processing and Tests with GIOVE
*Mudrak, Alexander*¹; *Defraigne, Pascale*²; *Binda, Stefano*¹; *Brunet, Michel*³
¹ESA (NETHERLANDS); ²Royal Observatory of Belgium (ORB) (BELGIUM); ³Timing
Expert (FRANCE)

15:20 European GNSS On-board Clocks: Status and Perspectives
Waller, Pierre
ESA (NETHERLANDS)

Session 4 - Optical Clocks

14:00 Prospects and Experiments for Pushing the Frequency Stability of Optical Lattice
Clocks to the Quantum Limit
*Westergaard, Philip*¹; *Lodewyck, Jérôme*¹; *Lecallier, Arnaud*¹; *Lorini, Luca*²;
*Lemonde, Pierre*¹
¹LNE-SYRTE (FRANCE); ²INRIM (ITALY)

14:20 New Nonlinear and Multipole Effects on Optical Lattice Clock
*Palchikov, Vitaly*¹; *Marmo, Sergey*²; *Ovsiannikov, Vitaly*²; *Taichenachev, Aleksey*³;
*Yudin, Valery*³; *Katori, Hidetochi*⁴; *Takamoto, M.*⁴
¹FGUP VNIIFTRI (RUSSIAN FEDERATION); ²Department of Physics, Voronezh
State University (RUSSIAN FEDERATION); ³Institute of Laser Physics, Novosibirsk
(RUSSIAN FEDERATION); ⁴University of Tokyo (JAPAN)

14:40 Toward a Mercury Optical Lattice Clock: Development of a Dipole Lattice Trap
Mejri, Sinda ; *Yi, Lin* ; *McFerran, John J.* ; *Bize, Sébastien*
SYRTE, Observatoire de Paris (FRANCE)

15:00 High-Resolution Laser Spectroscopy of the 467 nm S - F Electric Octupole Transition
In Yb+
Peik, Ekkehard ; *Huntemann, Nils* ; *Sherstov, Ivan* ; *Okhapkin, Maxim* ; *Lipphardt,*
Burghard ; *Tamm, Christian*
PTB (GERMANY)

15:20 Strontium Ion Optical Clocks for Space Applications
Barwood, Geoffrey ; *Gill, Patrick* ; *Huang, Guilong* ; *Klein, Hugh*
National Physical Laboratory (UNITED KINGDOM)

15:40 Coffee break

Session 5 - Resonant Sensors

16:10 Invited Presentation - Advances in Chip-Scale Atomic Magnetometers
Knappe, Svenja ; *Griffith, W. Clark* ; *Preusser, Jan* ; *Mhaskar, Rahul* ; *Jimenez-*
Martinez, Ricardo ; *Kitching, John*
NIST (UNITED STATES)

- 16:50 High-Speed High Dynamic Range Resonant SAW Torque Sensor for Kinetic Energy Recovery System
Kalinin, Victor ; Lohr, Raymond ; Leigh, Arthur ; Beckley, John ; Bown, George
Transense Technologies plc (UNITED KINGDOM)
- 17:10 BAW Pressure Sensor on LiNbO₃ Membrane Lapping
Baron, Thomas¹ ; Masson, Jeremie² ; Romand, Jean Pierre¹ ; Alzuaga, Sebastien¹ ; Catherinot, Lise³ ; Chatras, Matthieu³ ; Ballandras, Sylvain¹
¹FEMTO-ST (FRANCE); ²SENSeOR SAS (FRANCE); ³Xlim (FRANCE)
- 17:30 A High Sensitivity Open Loop Electronics for Gravimetric Acoustic Wave-Based Sensors
Rabus, David ; Martin, Gilles ; Carry, Emile ; Blondeau-Patissier, Virginie ; Ballandras, Sylvain
FEMTO-ST Besançon (FRANCE)
- 17:50 Topology Dependence of Mass Sensitivities in Mode Localized Sensors
Thiruvengathan, Pradyumna ; Yan, Jize ; Seshia, Ashwin
University of Cambridge (UNITED KINGDOM)

Session 6 - T&F Transfer through Optical Fibers

- 16:10 Multiplexed Optical Link for Ultra-Stable Frequency Dissemination
Amy-Klein, Anne¹ ; Lopez, Olivier² ; Jiang, Haifeng³ ; Chanteau, Bruno² ; Haboucha, Adil³ ; Roncin, Vincent² ; Kéfélian, Fabien² ; Chardonnet, Christian² ; Santarelli, Giorgio³
¹Université Paris 13 (FRANCE); ²LPL - CNRS - UP13 (FRANCE); ³LNE-SYRTE - CNRS - UPMC - Obs de Paris (FRANCE)
- 16:30 Long Haul Frequency Transfer between MPQ and PTB using a Telecommunication Fiber Link of 900 km Length
Predehl, Katharina¹ ; Udem, Thomas¹ ; Alnis, Janis¹ ; Ronald, Holzwarth¹ ; Terra, Osama² ; Grosche, Gesine² ; Schnatz, Harald² ; Hänsch, Theodor W.¹
¹Max-Planck-Institute of Quantum Optics (GERMANY); ²Physikalisch-Technische Bundesanstalt (GERMANY)
- 16:50 Fiber Based One Way Time Transfer with Enhanced Accuracy
Ebenhag, Sven-Christian ; Hedekvist, Per Olof
SP Technical Research Institute of Sweden (SWEDEN)
- 17:10 Time Transfer Through Optical Fibers: Progress on Calibrated Clock Comparisons
Rost, Michael¹ ; Fujieda, Miho² ; Piester, Dirk¹
¹Physikalisch-Technische Bundesanstalt, Braunschweig (GERMANY); ²National Institute of Information and Communications Technology, Tokyo (JAPAN)
- 17:30 Dissemination of Frequency References to Many Locations Along an Optical Telecommunication Fiber
Grosche, Gesine
Physikalisch-Technische Bundesanstalt (GERMANY)

- 17:50 Time Transfer Using Fiber Links
*Smotlacha, Vladimir*¹; *Kuna, Alexander*²; *Mache, Werner*³
¹CESNET (CZECH REPUBLIC); ²Institute of Photonics and Electronics, AS CR, v.v.i., Prague
(CZECH REPUBLIC); ³Bundesamt für Eich - und Vermessungswesen, Vienna (AUSTRIA)

Wednesday, 14 April 2010

Session 7 - Space-based T&F Transfer

- 09:00 Development of the European Laser Timing Instrumentation for the ACES Time Transfer using Laser Pulses
*Prochazka, Ivan*¹; *Kodet, Jan*¹; *Blazej, Josef*¹; *Schreiber, Ulrich*²; *Cacciapuoti, Luigi*³
¹Czech Technical University in Prague (CZECH REPUBLIC); ²Technische Universitaet Muenchen (GERMANY); ³European Space Agency, ESA (NETHERLANDS)
- 09:20 Time Transfer by Laser Link - T2L2: Current Status of the Validation Program
*SAMAIN, Etienne*¹; *GUILLEMOT, Philippe*²; *EXERTIER, Pierre*¹; *PIERRON, Francis*¹;
*ALABANESE, Dominique*¹; *PARIS, Jocelyn*¹; *TORRE, Jean-Marie*¹; *LEON, Sylvie*²
¹OCA (FRANCE); ²CNES (FRANCE)
- 09:40 A Coherent Optical Link through the Turbulent Atmosphere: Context and Applications
*Wolf, Peter*¹; *Acef, Ouali*¹; *Clairon, André*¹; *Djerroud, Khelifa*¹; *Lemonde, Pierre*¹;
*Man, Catherine*²; *Samain, Etienne*³
¹LNE-SYRTE, Observatoire de Paris, CNRS, UPMC (FRANCE); ²ARTEMIS, Observatoire de la Côte d'Azur, CNRS (FRANCE); ³GéoAzur, Observatoire de la Côte d'Azur, CNRS (FRANCE)
- 10:00 VLBI Time-Transfer using CONT08 Data
*Rieck, Carsten*¹; *Haas, Rüdiger*²; *Jaldehyag, Kenneth*³; *Johansson, Jan*¹
¹SP / Chalmers / OSO (SWEDEN); ²Chalmers University of Technology, Onsala Space Observatory (SWEDEN); ³SP Technical Research Institute of Sweden (SWEDEN)
- 10:20 Millisecond Pulsars to Transfer the Accuracy of Atomic Time
*Petit, Gérard*¹; *Cognard, Ismaël*²
¹BIPM, 92312 Sèvres (FRANCE); ²LCP2E/CNRS 45071 Orléans (FRANCE)

Session 8 - RF Acousto-electronic

- 09:00 Electrostrictive thin films for RF acoustic resonators
Defay, E.; *Le Rhun, G.*; *Sanchez, S.*; *Parat, G.*; *Billard, C.*; *Mercier, D.*
CEA Leti Minattec, FRANCE
- 09:20 A 2D Transducer Structure for the Excitation of Surface Acoustic Wave
*Daniau, William*¹; *Baron, Thomas*²; *Garcia, Julien*¹; *Laroche, Thierry*¹; *Ballandras, Sylvain*³
¹CNRS (FRANCE); ²ENSMM (FRANCE); ³CNRS/SENSeOR (FRANCE)

- 09:40 Large Bandpass Filter Synthesis using Shear-Wave Lithium Niobate Piezoelectric Layers
Rigaudeau, Laetitia¹; Monfraix, Philippe²; Ballandras, Sylvain³; Baron, Thomas³; Chatras, Matthieu⁴; Bila, Stéphane⁴; Cros, Dominique⁴
¹CNES (FRANCE); ²Thalès Alenia Space (FRANCE); ³Femto ST (FRANCE); ⁴Xlim Research Institute, University of Limoges (FRANCE)
- 10:00 Fabrication of a 3 GHz Oscillator based on NANO-Carbon-DIAMOND-FILM-BASED Guided Wave Resonators
Salut, Roland¹; Gesset, Céline²; Martin, Gilles¹; Saada, Samuel²; Assouar, Badreddine³; Bergonzo, Philippe²; Boudot, Rodolphe¹; Bénédict, Fabien⁴; Elmazria, Omar³; Omnes, Franck⁵; Rémiens, Denis⁶; Ballandras, Sylvain⁷
¹CNRS (FRANCE); ²CEA-LIST (FRANCE); ³CNRS-IJL (FRANCE); ⁴CNRS-LIMHP (FRANCE); ⁵CNRS-Inst. Néel (FRANCE); ⁶IEMN (FRANCE); ⁷CNRS/SENSeOR (FRANCE)
- 10:40 Micromachined Thin film Plate Acoustic Resonators (FPAR): Theory and Applications
Yantchev, Ventsislav ; Katardjiev, Ilia
 Uppsala University (SWEDEN)
- 11:00 Coffee break

Session 9 - Timescales and Algorithms

- 11:20 Real-Time Detection of Anomalies for Atomic Clocks in Space by Means of the GLRT
Emilia, Nunzi ; Saltanocchi, Giorgio
 University of Perugia (ITALY)
- 11:40 Optimal and Unbiased FIR Estimates of Clock State for Space and Ground Applications
Shmaliy, Yuriy ; Ibarra-Manzano, Oscar
 Guanajuato University (MEXICO)
- 12:00 Ongoing Improvements of the Time and Frequency References at LNE-SYRTE
Abgrall, Michel ; Urrich, Pierre ; Valat, David
 LNE-SYRTE, Observatoire de Paris, LNE, CNRS, UPMC (FRANCE)
- 12:20 Results from NPL's Clock Ensemble Algorithm
Shemar, Setnam ; Davis, John A. ; Whibberley, Peter B.
 National Physical Laboratory (UNITED KINGDOM)
- 12:40 Master Clock for Real Time Realization UTC(SU) Paper Clock
Koshelyaevsky, N. ; Pentin, S.
 Division of Time Standard, VNIIFTRI (RUSSIAN FEDERATION)

Session 10 - Stable Lasers

- 11:20 An Ultra-Low Frequency Noise Agile Laser
Haboucha, Adil ; Jiang, Haifeng ; Kéfélian, Fabien ; Lemonde, Pierre ; Clairon, André ; Giorgio, Santarelli
 SYRTE - Observatoire de Paris (FRANCE)

- 11:40 Development of an Ultra-Stable Monocrystalline Silicon Resonator for Optical Clocks
Kessler, Thomas ¹; Hagemann, Christian ¹; Sterr, Uwe ¹; Riehle, Fritz ¹; Martin, Michael J. ²; Ye, Jun ²
¹Physikalisch Technische Bundesanstalt (GERMANY); ²JILA, NIST and University of Colorado (UNITED STATES)
- 12:00 Diode Laser Systems for Precision Measurement Applications on Earth and in Space
Peters, Achim ¹; Wicht, Andreas ²
¹Humboldt-Universität Berlin + FBH (GERMANY); ²Ferdinand-Braun-Institut / Leibniz Institut fuer Hoechstfrequenztechnik (FBH) (GERMANY)
- 12:20 The Space Optical Clocks (SOC) Project: Status and Perspectives
Tino, Guglielmo ¹; Sterr, U. ²; Görlitz, A. ³; Lemonde, P. ⁴; Salomon, C. ⁵; Schiller, S. ³
¹Universita' di Firenze (ITALY); ²Physikalisch-Technische Bundesanstalt Braunschweig (GERMANY); ³Heinrich-Heine-Universität Düsseldorf (GERMANY); ⁴LNE-SYRTE (FRANCE); ⁵Ecole Normale Supérieure Paris (FRANCE)
- 12:40 The Space Time Asymmetry Research (STAR) Program
Braxmaier, Claus ¹; Schuldt, Thilo ¹; Allab, Mohammed ¹; von Zoest, Tim ²; Theil, Stephan ²; Pelivan, Ivanka ²; Herrmann, Sven ³; Lämmerzahl, Claus ³; Peters, Achim ⁴; Möhle, Katharina ⁴; Wicht, Andreas ⁴; Nagel, Moritz ⁴; Kovalchuk, Evgeny ⁴; Döringshoff, Klaus ⁴; Dittus, Hansjörg ³
¹University of Applied Sciences Konstanz (GERMANY); ²DLR Bremen (GERMANY); ³ZARM University Bremen (GERMANY); ⁴Humboldt-University Berlin (GERMANY)
- 13:00 Lunch break

Session 11 - Microwave Clocks

- 14:00 Invited Presentation - Giant Coherence Times in a Trapped Atom Microwave Clock
Rosenbusch, Peter ¹; Ramirez-Martinez, Fernando ¹; Deutsch, Christian ²; Lacroute, Clement ¹; Reinhard, Friedemann ²; Schneider, Tobias ²; Reichel, Jakob ²
¹LNE-SYRTE (FRANCE); ²ENS, LKB (FRANCE)
- 14:40 Realisation of a Compact Laser-Pumped Rubidium Frequency Standard with $< 1 \times 10^{-12}$ Stability at 1 Second
Affolderbach, Christoph ¹; Gruet, Florian ²; Matthey, Renaud ²; Milet, Gaetano ²
¹Université de Neuchâtel (SWITZERLAND); ²Université de Neuchâtel - LTF (SWITZERLAND)
- 15:00 Testing Fundamental Physics by Searching the Derivative of the Comparison Frequency Between a CSO and a H-Maser
Tobar, Michael ¹; Wolf, Peter ²; Bize, Sebastien ²; Santarelli, Giorgio ²; Flambaum, Victor ³
¹University of Western Australia (AUSTRALIA); ²LNE-SYRTE, Observatoire de Paris, CNRS, UPMC (FRANCE); ³School of Physics, The University of New South Wales (AUSTRALIA)

Session 12 - Calibration

- 14:00 Toward an Unified TWSTFT and GNSS Calibration for UTC Time Transfer
Jiang, Z. ; Arias, E.F. ; Lewandowski, W. ; Petit, G.
Bureau International des Poids et Mesures (BIPM) (FRANCE)
- 14:20 Time Stability, Electrical Delay and Temperature Sensitivity of Dual Frequency GPS Receivers
Proia, Amandine¹; Cibiel, Gilles¹; Yaigre, Leslie²
¹CNES (FRANCE); ²Sogethi High-Tech (FRANCE)
- 14:40 On Improved GPS-Based Calibration of the Time Links between METAS and PTB
Feldmann, Thorsten¹; Bauch, Andreas¹; Piester, Dirk¹; Stefanov, André²; Bernier, Laurent-Guy²; Schlunegger, Christian²; Liang, Kun³
¹Physikalisch-Technische Bundesanstalt (PTB) (GERMANY); ²Bundesamt für Metrologie (METAS) (SWITZERLAND); ³National Institute of Metrology (NIM) (CHINA)
- 15:40 Coffee break

Poster Session I

16:10-18:00

A 2D Model for Bulk Acoustic Wave Devices using a Dyadic Green's Function of Laminar Plates

Ballandras, Sylvain¹; Daniau, William²; Garcia, Julien²; Laroche, Thierry²; Reinhardt, Alexandre³
¹CNRS/SENSeOR (FRANCE); ²CNRS (FRANCE); ³CEA-LETI (FRANCE)

Dual-Mode Quartz Resonators Suitable for TCXO and OCXO

Kosykh, Anatoly ; Khomenko, Igor
Omsk State technical university (RUSSIAN FEDERATION)

Modification of the Intrinsic Properties of Gaas, Gaph and Sic Samples under Light at Cryogenic Temperatures

Mouneyrac, David¹; Hartnett, John G.²; Le Floch, Jean-Michel²; Krupka, Jerzy³; Cros, Dominique¹;
Tobar, Michael E.²
¹XLIM (FRANCE); ²FSM (AUSTRALIA); ³Institute of Microelectronics and Optoelectronics (POLAND)

Langasite Resonant Structures: Fabrication and Characterization

Leblois, Therese¹; Le Traon, Olivier²
¹FEMTO-ST Institute (FRANCE); ²ONERA (FRANCE)

Coupled Modes in Plano-Convex Bulk Acoustic Wave Quartz Resonators

Imbaud, Joël ; Dulmet, Bernard ; Bourquin, Roger
FEMTO-ST (FRANCE)

Resonator Frequency Stability Contribution to the Performance of Ultrastable Oscillators
Before and After Integration

Salzenstein, Patrice¹; Kuna, Alexander²; Sojdr, Ludvík²; Cemusova, Blanka²; Franquet, Nathalie¹; Lefebvre, Frédéric³

¹CNRS - FEMTO-ST (FRANCE); ²IPE - Czech Academy of Sciences (CZECH REPUBLIC);

³Oscilloquartz S.A. (SWITZERLAND)

Miniature High-End Space Grade Ocxo

Canzian, Patrice ; Schneller, Luc ; Trialoup, Claude ; Candelier, Vincent ; Lamboley, Jacques Rakon (FRANCE)

New State of the Art of Thermal Sensitivity with Space Ultra Stable Quartz Crystal Oscillator

Schneller, Luc¹; Canzian, Patrice¹; Candelier, Vincent¹; Galliou, Serge²; Cibié, Gilles³

¹Rakon (FRANCE); ²Femto-ST (FRANCE); ³CNES (FRANCE)

A New Ultrahigh Resolution Comparison Approach between Frequency Standards

Zhao, Jie ; Zhou, Wei ; Chen, Faxi ; Li, Hong ; Ding, Ning ; Zou, Chengzhi

Xidian University (CHINA)

Self-Identification of Differences between Aging Rates of Two Frequencies Excited in the
Dual-Mode Crystal Oscillator

Stofanik, Vladimir ; Minarik, Marian ; Balaz, Igor ; Cocherova, Elena ; Kozinka, Stanislav
FEI STU (SLOVAKIA)

Correction of Elastic, Piezoelectric and Dielectric Constants of NdCa₄O(BO₃)₃ Crystal using
Measured SAW Parameters

Brzozowski, Ernest ; Soluch, Waldemar
Institute of Electronic Materials Technology (POLAND)

Development of a Compact Yb Optical Lattice Clock

Görlitz, Axel ; Abou-Jaoudeh, Charbel ; Bruni, Cristian ; Ernsting, Ingo ; Nevsky, Alexander ;
Schiller, Stephan

University of Düsseldorf (GERMANY)

Dark-Resonance in Wall-Coated Cell for Rb-Clocks

Breschi, Evelina ; Mileti, Gaetano
University of Neuchâtel (SWITZERLAND)

Fabrication and Spectroscopy of Cs Vapour Cells with Buffer Gas for Miniature Atomic Clock

Miletic, Danijela¹; Affolderbach, Christoph¹; Breschi, Evelina¹; Schori, Christian¹; Miletic, Gaetano¹; Hasegawa, Madoka²; Chutani, Ravinder²; Dziuban, Piotr²; Boudot, Rodolphe²; Giordano, Vincent²; Gorecki, Christophe²

¹University of Neuchâtel (SWITZERLAND); ²FEMTO-ST (FRANCE)

Development of Passive Hydrogen Maser in Shanghai

Xie, Yonghui ; Dai, Jiayua ; Chen, Wenxing ; Liu, Tiexin ; Zhang, Yong ; Pen, Jixing ; Lin, Chuanfu

Shanghai Astronomical Observatory (CHINA)

100 MHz Line Width in a Neutral Atom Microwave Clock

Deutsch, Christian ¹; Ramirez-Martinez, Fernando ²; Lacroute, Clement ²; Reinhard, Friedemann ¹;

Schneider, Tobias ¹; Reichel, Jakob ¹; Rosenbusch, Peter ²

¹ENS, LKB (FRANCE); ²LNE-SYRTE (FRANCE)

Investigating $\Delta m = \pm 1$ Transitions in an Atomic Fountain Clock

Nemitz, Nils ; Gerginov, Vladislav ; Wynands, Robert ; Weyers, Stefan

Physikalisch-Technische Bundesanstalt (GERMANY)

Pulsed Optically Pumped Rb Clock with Optical Detection: First Results

Micalizio, Salvatore ¹; Godone, Aldo ¹; Levi, Filippo ¹; Calosso, Claudio ¹; Bandi, Thejesh ²; Pellaton, Matthieu ²; Gruet, Florian ²; Affolderbach, Christoph ²; Mileti, Gaetano ²

¹Istituto Nazionale di Ricerca Metrologica, INRIM (ITALY); ²Laboratoire Temps – Fréquence (LTF), Université de Neuchâtel (SWITZERLAND)

Study of Rb 0-0 Hyperfine Double-Resonance Transition in a Wall-Coated Cell

Bandi, Thejesh ; Affolderbach, Christoph ; Mileti, Gaetano

Laboratoire Temps-Fréquence, University of Neuchatel (SWITZERLAND)

Stark Shift of the Cs Clock Transition Frequency: a CPT-Pump-Probe Approach

Robyr, Jean-Luc ; Knowles, Paul ; Weis, Antoine

University of Fribourg (SWITZERLAND)

Low Temperature Indium-based Sealing of Microfabricated Alkali Cells for Chip Scale Atomic Clocks

Pétremand, Yves ¹; Schori, Christian ²; Straessle, Rahel ¹; Mileti, Gaetano ²; de Rooij, Nico ¹; Thomann, Pierre ²

¹Ecole Polytechnique Fédérale de Lausanne (EPFL) (SWITZERLAND); ²LTF, University of Neuchatel (SWITZERLAND)

Measurements of Cs-buffer Gas Collisional Frequency Shift using CPT Interrogation

Kozlova, Olga ¹; Boudot, Rodolphe ²; Guérandel, Stéphane ¹; De Clercq, Emeric ¹

¹Observatoire de Paris - LNE-SYRTE (FRANCE); ²FEMTO-ST, Time & Frequency Dpt (FRANCE)

Progress on Passive H-maser for Compass System

Yang, Ren-fu ; Li, Jing ; Chen, Hai-bo ; Zhang, Ji-hong ; Gao, Lian-shan

Beijing Institute of Radio Metrology & Measurement (CHINA)

Cs Fountain VNIIFTRI

Domnin, Yuri ; Baryshev, V. ; Boyko, A. ; Elkin, G. ; Kopylov, L. ; Krasovskiy, P. ; Novoselov, A.

FGUP VNIIFTRI (RUSSIAN FEDERATION)

The Compensation and Processing Techniques used for Rubidium Frequency Standards
Zhou, Wei ; Ding, Ning ; Zou, Chengzhi ; Li, Hong
Xidian University (CHINA)

FM Spectroscopy of Nonlinear Magneto-Optical Resonances
Baryshev, Viacheslav
FGUP VNIIFTRI (RUSSIAN FEDERATION)

CPT Atomic Clock based on Rubidium 85
Schori, C. ¹; Miletì, G. ¹; Leuenberger, B. ²; Rochat, P. ²
¹University Neuchâtel, Time- Frequency Laboratory (LTF) (SWITZERLAND); ²SpectraTime (SWITZERLAND)

Recent Progress on Superconducting Cavity for Frequency Standard in China
Wang, Nuanrang
Beijing Institute of Radio Metrology & Measurement (CHINA)

Study on a High Q Sapphire Loaded Microwave Cavity for Compact Hydrogen Maser
Wang, Nuanrang
Beijing Institute of Radio Metrology & Measurement (CHINA)

Carrier Suppression of Phase Modulated Beam using Optical Cavity for CPT Clock
Choi, In Ho ¹; Lee, Sang-Bum ²; Kwon, Taeg Yong ²; Park, Sang Eon ²
¹KAIST, KRISS (KOREA, REPUBLIC OF); ²KRISS (KOREA, REPUBLIC OF)

New Design Toward a Miniature Atomic Clock using a $\Sigma^+ - \Sigma^-$ CPT Configuration
Haesler, Jacques ; Lecomte, Steve
Centre Suisse d'Electronique et de Microtechnique (CSEM) SA (SWITZERLAND)

Narrow Linewidth Lasers for a Strontium Optical Lattice Clock
Bridge, Elizabeth M. ¹; Hill, Ian R. ²; Barwood, Geoffrey P. ³; Curtis, E. Anne ²; Gill, Patrick ⁴
¹National Physical Laboratory and University of Oxford (UNITED KINGDOM); ²National Physical Laboratory and Imperial College London (UNITED KINGDOM); ³National Physical Laboratory (UNITED KINGDOM); ⁴National Physical Laboratory, University of Oxford and Imperial College London (UNITED KINGDOM)

Towards an Optical Frequency Standard Based on Lattice-Confined Neutral Magnesium Atoms
Pape, Andre ¹; Friebe, Jan ¹; Riedmann, Matthias ¹; Terra, Osama ²; Wuebbena, Temmo ¹; Kulosa, Andre ¹; Kelkar, Hrishikesh ¹; Amairi, Sana ¹; Predehl, Katharina ²; Feldmann, Thorsten ²; Legero, Thomas ²;
Lipphardt, Burghard ²; Grosche, Gesine ²; Schnatz, Harald ²; Ertmer, Wolfgang ¹; Rasel, Ernst-Maria ¹
¹Institute of Quantum Optics (GERMANY); ²Physikalisch-Technische Bundesanstalt (GERMANY)

Development of a Transportable Laser Cooled Strontium Source for Future Applications in Space

Schioppo, Marco ¹; Tino, G.M. ¹; Poli, N. ¹; Tarallo, M.G. ¹; Sutyin, D.V. ¹; Prevedelli, M. ¹; Sorrentino, F. ¹; Lisdat, Ch. ²; Vellere Winfred, J.S.R. ²; Falke, S. ²; Sterr, U. ²; Legero, T. ²; Riehle, F. ²; Cacciapuoti, L. ³

¹Università di Firenze, Dipartimento di fisica, European Laboratory for Non-Linear Spectroscopy (ITALY); ²Physikalisch-Technische Bundesanstalt Braunschweig (GERMANY); ³ESA (NETHERLANDS)

The ACES GNSS Subsystem and its Applications

Hess, Marc Peter ¹; Helm, Achim ¹; Cacciapuoti, Luigi ²; Feltham, Stephen ²; Much, Rudolf ²; Nasca, Rosario ²; Montenbruck, Oliver ³; Gribkov, Alexander ⁴

¹Astrium Space Transportation (GERMANY); ²European Space Agency (NETHERLANDS); ³DLR/GSOC (GERMANY); ⁴JAVAD GNSS (RUSSIAN FEDERATION)

GGTO and UTC Dissemination Results in GIOVE-Mission

Mudrak, Alexander ¹; Gaetano, Galluzzo ²

¹ESA (NETHERLANDS); ²VEGA (NETHERLANDS)

On Site Activities of the Galileo Precise Timing Facility

Zanello, Renzo ¹; Piras, Chiara ²; Samperi, Andrea ²; Detoma, Edoardo ³; Capetti, Paola ³; Ferrato, Andrea ⁴; Villabruna, Diego ⁴; Mudrak, Alexander ⁵

¹ThalesAleniaSpace Italia (ITALY); ²SSE (ITALY); ³SEPA (ITALY); ⁴AleniaSIA (ITALY); ⁵ESA (NETHERLANDS)

Aircraft High Dynamic Two-Way Time Synchronization Technique Research

Ma, Hong-Jiao ¹; He, Zai-Min ²; Wu, Jian-Feng ¹; Wang, Ji-Gang ¹; Wang, Kang ¹

¹National Time Service Center, Chinese Academy of Sciences (CHINA); ²Graduate University of Chinese Academy of Sciences (CHINA)

Improvement of Asia-Pacific TWSTFT Results Utilizing Full Time Transfer Network Data

Lin, Huang-Tien ; Liao, Chia-Shu ; Chu, Fang-Dar ; Tseng, Wen-Hung

National Time and Frequency Standard Laboratory (TAIWAN)

Timing Accuracy Analysis using Height as Virtual Satellite

Shan, Qingxiao; Yueke, Wang; Jun, Yang; Jianyun, Chen

National University of Defense Technology (CHINA)

Improvement Method of the Timing Accuracy by using Legacy Loran Signal

Yang, Sung-Hoon ¹; Lee, Chang Bok ¹; Lee, Sang Jeong ²; Kim, Young Jae ¹; Lee, Jong Ku ¹

¹KRISS (KOREA, REPUBLIC OF); ²CNU (KOREA, REPUBLIC OF)

Monitoring and Prediction of GNSS System Time Difference

Zhang, Huijun ; Li, Xiaohui

National Time Service Center (CHINA)

Report on Progress of Multi-System Time Transfer at the AOS

Nawrocki, Jerzy ; Nogas, Pawel

Space Research Centre (POLAND)

GEOSTAR: a Proposal for Global Earth and In-Orbit Synchronisation of Time Atomic References

Dimarcq, Noel¹; Samain, Etienne²; Léger, Benoît³

¹CNRS-Paris Observatory (FRANCE); ²Observatoire de la Cote d'Azur - Geosciences Azur (FRANCE); ³CNES (FRANCE)

Simulation of Servo Loops in Atomic Clock Ensemble in Space (Aces)

Dam, Joydeep Kumar¹; Schaefer, Wolfgang¹; Hejc, Gerhard¹; Hess, Marc-Peter²; Stringhetti, Luca²;

Kehrer, Johannes²; Cacciapuoti, Luigi³

¹TimeTech GmbH (GERMANY); ²EADS Astrium (GERMANY); ³ESA (NETHERLANDS)

Satellite Navigation Augmentation Technology Based on Digital Video Broadcasting Signal

Song, Kexin ; Wu, Haitao ; Hua, Yu ; Guo, Wei

National Time Service Center, Chinese Academy of Science (CHINA)

The Research and Application of Measuring Pseudo Distance with DTV Signal in Navigation

Song, Kexin ; Hua, Yu ; Xiang, Yu ; Li, Shifeng

National Time Service Center, Chinese Academy of Science (CHINA)

Optical Frequency Dissemination over a German Wide-Area Telecommunication Network

Terra, Osama¹; Grosche, Gesine¹; Predehl, Katharina²; Holzwarth, Ronald³; Schnatz, Harald¹

¹Physikalisch-Technische Bundesanstalt, Braunschweig (GERMANY); ²Max Planck Institute for Quantum Optics (GERMANY); ³Max Planck Institute for Quantum optics, Garching (GERMANY)

An Ultra Stable Event Timer Designed for T2L2

Samain, Etienne¹; Fridelance, Patricia²; Guillemot, Philippe³

¹OCA (FRANCE); ²Phusipus Integration (FRANCE); ³CNES (FRANCE)

A Novel Synchronization Method by Simulated Gps Radio Signal

Shan, qingxiao ; wang, yueke ; yang, jun ; chen, jianyun

national university of defense technology (CHINA)

Restore the TWSTFT Calibration with a GPS Bridge - A Standard Procedure for UTC Time Transfer

Jiang, Zhiheng¹; Piester, D.²; Liang, K.³

¹Bureau International des Poids et Mesures (BIPM) (FRANCE); ²Physikalisch-Technische Bundesanstalt (GERMANY); ³National Institute of Metrology (CHINA)

Performance Evaluation of NIM GPS Receivers in use for Time Transfer with PTB

Liang, Kun¹; Feldmann, Thorsten²; Bauch, Andreas²; Piester, Dirk²; Zhang, Aimin¹; Gao, Xiaoxun¹

¹National Institute of Metrology (NIM) (CHINA); ²Physikalisch-Technische Bundesanstalt (PTB) (GERMANY)

A Model of Joint Time Keeping with Hydrogen Masers and Cesium Clocks

Yuan, Haibo ; Dong, Shaowu ; Qu, Lili

National Time Service Center, Chinese Academy of Sciences (CHINA)

19:00-22:00 Conference Dinner

Thursday, 15 April 2010

Session 13 - T&F Transfer

- 09:00 Invited Presentation - Use of GPS Precise Point Positioning for TAI
Petit, Gérard
BIPM (FRANCE)
- 09:40 On the Correlation of Tropospheric Zenith Path Delay and Station Clock Estimates in Geodetic GNSS Frequency Transfer
Weinbach, Ulrich ; Schön, Steffen
Leibniz Universität Hannover (GERMANY)
- 10:00 Long-term Inconsistency of TWSTFT and GPS Time Transfers Results In PTB-TL and NICT-TL Time Links
Lin, Calvin. S.Y.¹; Feng, Kai-Ming²; Lin, Huang-Tien¹; Huang, Yi-Jiung¹
¹Telecommunication Labs (TAIWAN); ²National Tsing Hua University (TAIWAN)
- 10:20 Near-Real Time Synchronization through a Network of GNSS Receivers Located in Timing Laboratories
Cerretto, Giancarlo¹; Perucca, Andrea²; Tavella, Patrizia²; Píriz, Ricardo³
¹INRIM - Politecnico di Torino (DISPEA) (ITALY); ²INRIM (ITALY); ³GMV (SPAIN)

Session 14 - Oscillators and Noise

- 09:00 A Cryogenic Sapphire Oscillator Based on an Ultra-Low Vibration Custom-Designed Cryostat and a Pulse-Tube Cryocooler
Hartnett, John¹; Nand, Nitin¹; Wang, Chao²; Le Floch, Jean-Michel¹
¹University of Western Australia (AUSTRALIA); ²Cryomech, Inc. (UNITED STATES)
- 09:20 Demonstration of a Cryocooled 10 GHz Oscillator with 1e-15 Frequency Stability
Grop, Serge¹; Bourgeois, Pierre Yves¹; Bazin, Nicolas¹; Kersalé, Yann¹; Rubiola, Enrico¹; Langham, Conway²; Oxborrow, Mark²; De Vicente, Javier³; Giordano, Vincent¹
¹Institut FEMTO-ST (FRANCE); ²National Physical Laboratory (UNITED KINGDOM); ³European Space Agency (GERMANY)
- 09:40 D.C.-Powered Fe³⁺: Sapphire Maser Oscillator
Oxborrow, Mark¹; Bourgeois, Pierre-Yves²; Kersalé, Yann²; Giordano, Vincent²
¹NPL (UNITED KINGDOM); ²Institut FEMTO-ST (FRANCE)
- 10:00 Cross Correlation Residual Phase Noise Measurements using Two HP3048-A Systems and a PC Based dual channel FFT Spectrum Analyser
Bale, Simon¹; Adamson, David²; Wakley, Brett¹; Everard Jeremy¹
¹University of York (UNITED KINGDOM); ²Formerly University of York (UNITED KINGDOM)
- 10:20 The Phase Noise Spectrum and Structure of Photons?
Underhill, Mike
Underhill Research (UNITED KINGDOM)
- 10:40 Coffee break

Session 15 - GNSS Timing II

- 11:20 Performance Overview of Space Rubidium Standards
Droz, Fabien ; Rochat, Pascal ; Wang, Qinghua
SpectraTime (SWITZERLAND)
- 11:40 Space Passive Hydrogen Maser - Performances, Lifetime Data and GIOVE-B Related Telemetries
Belloni, Marco ¹; Droz, Fabien ²; Resti, Alberto ³; Mosset, Pierre ²; Ostillio, Alessandra ³;
Beretta, Simone ¹; Gioia, Marina ¹; Waller, Pierre ³; Qinghua, Wang ²; Rochat, Pascal ²
¹Selex Galileo (ITALY); ²SpectraTime (SWITZERLAND); ³ESA (NETHERLANDS)
- 12:00 A Simulation of the Effect of Improved Ground Clocks on GPS Timing Performance
Suess, Matthias ¹; Matsakis, Demetrios ²
¹German Aerospace Center (GERMANY); ²U.S. Naval Observatory (UNITED STATES)
- 12:20 Future Concepts for On-Board Timing Subsystems for Navigation Satellites
Felbach, Dirk ; Soualle, Francis ; Stopfkuchen, Lars ; Zenzinger, Alexander
Astrium GmbH (GERMANY)
- 12:40 Optical Clock Technology for Optimized Satellite Navigation
Plattner, Markus P. ¹; Hugentobler, Urs ²; Voithenleitner, Dominik ²; Markus, Heinze ²;
Klein, Volker ¹; Kemmerle, Kurt ¹; Bedrich, Stefan ¹
¹Kayser-Threde GmbH (GERMANY); ²Technische Universitaet Muenchen (GERMANY)

Session 16 - Frequency Combs

- 11:20 Invited Presentation - First Fully Stabilized Frequency Comb from a SESAM-Modelocked 1.5- μ m Solid-State Oscillator
Stumpf, Max C. ¹; Pekarek, Selina ¹; Oehler, Andreas E. H. ¹; Südmeyer, Thomas ¹;
Dudley, John M. ²; Keller, Ursula ¹
¹ETH Zurich (SWITZERLAND); ²Université de Franche-Comté (FRANCE)
- 12:00 Ultra-Low Noise Microwave Extraction from Fiber-Based Optical Frequency Comb
Zhang, Wei ¹; Xu, Z. ²; Millo, J. ¹; Boudot, R. ²; Lours, M. ¹; Bourgeois, P. Y. ²; Luiten, A. N. ³;
Le Coq, Y. ¹; Kersalé, Y. ²; Santarelli, G. ¹
¹LNE-SYRTE, Observatoire de Paris, CNRS, UPMC (FRANCE); ²FEMTO-ST Institute, CNRS and ENSMM, Besançon (FRANCE); ³School of Physics, University of Western Australia (AUSTRALIA)
- 12:20 Optical Frequency Combs and Applications at NPL
Margolis, Helen ¹; Marra, Giuseppe ¹; Tsaturian, Veronika ¹; Walton, Barney ¹; Lea, Stephen ¹;
Reid, Derryck ²; Gill, Patrick ¹
¹National Physical Laboratory (UNITED KINGDOM); ²Heriot-Watt University (UNITED KINGDOM)

12:40 Octave-Spanning Tunable Frequency Combs on a Chip
Holzwarth, Ronald¹; Del'Haye, P.¹; Herr, T.¹; Gavartin, E.²; Kippenberg, T.J.²
¹Menlo Systems GmbH (GERMANY); ²Ecole Polytechnique Fédérale de Lausanne (EPFL) (SWITZERLAND)

13:00 Lunch break

Poster Session II

14:00-15:40

Multi-channel Real-time Computation of ADEV and TDEV
Kasznia, Michal
Poznan University of Technology (POLAND)

Joint Real-Time Computation of Allan Deviation, Time Deviation, and Hadamard Deviation
Dobrogowski, Andrzej ; Kasznia, Michal
Poznan University of Technology (POLAND)

Hardware and Software Realization of Time Error Measurement with Real-Time Assessment of ADEV, TDEV, and MTIE
Dobrogowski, Andrzej ; Jessa, Mieczyslaw ; Kasznia, Michal ; Lange, Krzysztof ; Jaworski, Michal
Poznan University of Technology (POLAND)

From Allan Variance to Phase Noise: A New Conversion Approach
Zhang, Shengkang ; Wang, Hongbo ; Wang, Xueyun ; Yang, Jun
Beijing Institute of Radio Metrology and Measurement (CHINA)

Thermal Sensitivity of a DMTD used in a Composite Clock
Plantard, Cédric ; Vernotte, François ; Meyer, Eric
Observatoire de Besançon (FRANCE)

A Time Interval Measurement for Satellite Time Standard Assembly
Shi, Shao-hua¹; Li, Xiao-Hui²; Zhang, Hui-Jun²; Zhao, Zhi-Xiong²
¹Graduate University of the Chinese Academy of Sciences (CHINA); ²National Time Service Center (CHINA)

Low Phase Noise Frequency Synthesizer for Satellite Communication Systems
Bolucek, Muhsin
TUBITAK-UZAY (TURKEY)

An Algorithm for Automating Fast and Accurate Measurements of the Resonance Frequencies
Droit, Christophe¹; Friedt, Jean-Michel¹; Ballandras, Sylvain²; Martin, Gilles²
¹SENSeOR (FRANCE); ²Femto-st (FRANCE)

Heatproof Microwave Sensors. Flame Parameters Diagnostics in Combustion Chambers of the Different Engine Types
Safonova, Ekaterina ; Boloznev, Victor
Kazan State Technical University (RUSSIAN FEDERATION)

Phase Errors in Surface Acoustic Wave Devices under Rotation

Nikolaevtsev, Victor ; Suchkov, Sergey
Saratov State University (RUSSIAN FEDERATION)

The Progress of Strontium Optical Lattice Clock at NIM

Wang, Shao-Kai ; Wang, Qiang ; Li, Ye ; Lin, Yi-Ge ; Wang, Min-Ming ; Lin, Bai-Ke ; Zhao, Yang ; Zang, Er-Jun ; Li, Tian-Chu ; Fang, Zhan-Jun
National Institute of Metrology of China (CHINA)

Quantum Sensors with Cold Ions

Mehlstäubler, Tanja ; Pyka, Karsten ; Herschbach, Norbert
PTB (GERMANY)

High Performance Iodine Frequency Reference for Tests of the LISA Laser System

Doeringshoff, Klaus ; Moehle, Katharina ; Nagel, Moritz ; Kovalchuk, Evgeny V. ; Peters, Achim
Institut fuer Physik, AG Optische Metrologie, Humboldt Universitaet zu Berlin (GERMANY)

Piezo-Tunable High Finesse Cavity for LISA

Moehle, Katharina ; Doeringshoff, Klaus ; Nagel, Moritz ; Kovalchuk, Evgeny V. ; Peters, Achim
Humboldt Universitaet zu Berlin, Institut für Physik (GERMANY)

Tackling the Black Body Shift in a Strontium Optical Lattice Clock

Falke, Stephan ; Middelman, Thomas ; Lisdat, Christian ; Vellore Winfred, Joseph Sundar Raaj ; Riehle, Fritz ; Sterr, Uwe
Physikalisch-Technische Bundesanstalt (GERMANY)

Towards a Portable Aluminum Optical Clock

Schmidt, Piet ; Mandel, Olaf ; Sherstov, Ivan
PTB Braunschweig and Leibniz University of Hannover (GERMANY)

A Clock Laser with High Frequency Stability and Highly Precise Transfer

Li, Ying ; Nagano, Shigeo ; Matsubara, Kensuke ; Ito, Hiroyuki ; Kajita, masatoshi ; Hosokawa, Mizuhiko
National Institute of Information and Communication Technology (JAPAN)

Determining a Limit on the Variation of the Fine Structure Constant through Optical Frequency Measurements

in $^{171}\text{Yb}^+$

Godun, Rachel ; Webster, S.A. ; King, S.A. ; Huang, G. ; Walton, B.R. ; Tsaturian, V. ; Margolis, H.S. ; Lea, S.N. ; Gill, P.
National Physical Laboratory (UNITED KINGDOM)

Transportable Cavity-Stabilized Fiber Laser

Legero, Thomas ¹ ; Kessler, Thomas ² ; Grosche, Gesine ¹ ; Sterr, Uwe ² ; Schnatz, Harald ¹
¹Physikalisch-Technische Bundesanstalt (GERMANY); ²Physikalisch-Technische Bundesanstalt and Centre for Quantum Engineering and Space-Time Research (GERMANY)

Low Noise Optical Link Development at INRIM

Mura, Alberto ¹; Bastida, Karina ²; Levi, Filippo ¹; Calonico, Davide ¹; Lorini, Luca ¹; Costanzo, Giovanni Antonio ³; Godone, Aldo ¹

¹INRIM (ITALY); ²INTI (ARGENTINA); ³Politecnico di Torino (ITALY)

Development of an Yb Optical Lattice Clock at KRISS

Yu, Dai-Hyuk ; Park, Chang Yong ; Lee, Won-Kyu ; Kim, Eok Bong ; Mun, Jongchul

Korea Research Institute of Standards and Science (KOREA, REPUBLIC OF)

Stable Narrow Linewidth 689nm ECDL for the Second Stage Cooling of Strontium Atoms

LI, Ye ¹; LIN, YiGe ¹; YANG, Tao ²; CAO, JianPing ¹; FANG, ZhanJun ¹; ZANG, ErJun ¹

¹National Institute of Metrology (CHINA); ²Beijing Institute of Technology (CHINA)

Thermal Design of a High-Finesse Cavity Enclosure for an Ultra-Stable Laser

Dolgovskiy, Vladimir ; Schilt, Stephane ; Di Domenico, Gianni ; Hofstetter, Daniel ; Thomann, Pierre

University of Neuchâtel, Time and Frequency Laboratory (SWITZERLAND)

Demonstration of an Optical Frequency Synthesizer with Zero Offset Frequency Stabilization by the Direct Locking Method

Eok Bong, Kim ¹; Jae-hwan, Lee ²; Luu Tran, Trung ²; Won-Kyu, Lee ¹; Dai-Hyuk, Yu ¹; Han Young, Ryu ¹; Chang Hee, Nam ²; Chang Yong, Park ¹

¹Korea Research Institute of Standards and Science (REPUBLIC OF KOREA); ²Korea Advanced Institute of Science and Technology (REPUBLIC OF KOREA)

Frequency Dissemination with Free-Space Optical Links

Mata Calvo, Ramon ; Moll, Florian ; Knapek, Markus ; Giggenbach, Dirk

DLR - Deutsches Zentrum für Luft- und Raumfahrt (GERMANY)

Development of an Ultrastable Laser in the 1.5 μ m Band for CW Optical Frequency Transfer over Optical Fibre

Parker, Benjamin ¹; Webster, Stephen ¹; Lea, Stephen ¹; Gill, Patrick ¹; Bayvel, Polina ²

¹National Physical Laboratory (UNITED KINGDOM); ²Department of Electronic and Electrical Engineering, University College London (UNITED KINGDOM)

Millimeter Atomic Clock Based on the Laser Induced Line Narrowing Effect

Litvinov, Andrey ; Kazakov, George ; Matisov, Boris

Saint-Petersburg State Polytechnic University (RUSSIAN FEDERATION)

Yb Lattice Clock at INRIM

Calonico, Davide ¹; Levi, Filippo ¹; Lorini, Luca ¹; Costanzo, Giovanni Antonio ²; Bertacco, Elio Keith ¹;

Zoppi, Marco ²; Godone, Aldo ¹

¹Istituto Nazionale di Ricerca Metrologica INRIM (ITALY); ²Politecnico di Torino (ITALY)

The Statistical Uncertainty Associated with the Weighted Mean Frequency in Optical Frequency Comb Comparison

Lee, Won-Kyu ; Yu, Dai-Hyuk ; Park, Chang Yong ; Mun, Jongchul

Korea Research Institute of Standards and Science (KOREA, REPUBLIC OF)

Simple Method for Measuring Frequency Noise of Optical Frequency Comb in Optical Domain
Park, Sang Eon ; Lee, Sang-Bum ; Kim, Eok Bong ; Kwon, Taeg Yong
KRISS (KOREA, REPUBLIC OF)

Characteristics of Microwave Signals Generated with Two Diode Lasers Injection-Locked to an Optical Frequency Comb

Lee, Sang-Bum ; Park, Sang Eon ; Kwon, Taeg Yong
Korea Research Institute of Standard and Science (KOREA, REPUBLIC OF)

Progress on the Development of Nd: YAG Laser Frequency Stabilized on Iodine Transition for Space Applications

Turazza, Oscar ¹; Lours, Michel ²; Holleville, David ³; Du Burck, Frederic ⁴; Auger, Gérard ⁵; Brillet, Alain ⁶; Clairon, André ²; Acef, Ouali ²

¹SYRTE/APC/Observatoire de Paris (FRANCE); ²LNE-SYRTE / Observatoire de Paris/CNRS-UMR8630/UPMC-Paris 6 (FRANCE); ³LNE-SYRTE-Observatoire de Paris-CNRS (FRANCE); ⁴LPL / CNRS-UMR 7538 / Université Paris XIII (FRANCE); ⁵APC/ Observatoire de Paris/ Univ-Paris 7 (FRANCE); ⁶ARTEMIS / CNRS-UMR 6162/ Observatoire de la côte d'Azur (FRANCE)

A Simple Approach to Evaluate the Linewidth of a Laser from its Frequency Noise Spectral Density

Di Domenico, Gianni ; Dolgovskiy, Vladimir ; Schilt, Stéphane ; Thomann, Pierre
LTF, Université de Neuchâtel (SWITZERLAND)

Interactions Blackbody Radiation with Alkaline-Earth Atoms: Applications to Optical Frequency Standards on Sr Atoms

Palchikov, Vitaly ¹; Ovsiannikov, Vitaly ²; Sluysarev, Sergey ¹; Kostin, Aleksey ¹
¹FGUP VNIIFTRI (RUSSIAN FEDERATION); ²Department of Physics, Voronezh State University (RUSSIAN FEDERATION)

Development of a Dipole Lattice Trap for a Mercury Optical Lattice Clock

Yi, Lin ; Mejri, Sinda ; McFerran, John J. ; Bize, Sébastien
SYRTE, Observatoire de Paris (FRANCE)

Mini-DOLL (Deep Space Optical Laser Link): Experimental Setup and First Results

Djerroud, Khelifa ¹; Acef, Ouali ¹; Clairon, André ¹; Lemonde, Pierre ¹; Man, Catherine ²; Samain, Etienne ³; Wolf, Peter ¹

¹LNE-SYRTE, Observatoire de Paris, CNRS, UPMC (FRANCE); ²ARTEMIS, Observatoire de la Côte d'Azur, CNRS (FRANCE); ³GéoAzur, Observatoire de la Côte d'Azur, CNRS (FRANCE)

Precise Determination of the Refractive Index of Air in Fabry-Perot Cavity by Means of the Optical Frequency Comb

Smid, Radek ; Cip, Ondrej ; Mikel, Bretislav ; Buchta, Zdenek ; Cizek, Martin ; Lazar, Josef
Institute of Scientific Instruments of AS CR (CZECH REPUBLIC)

Phase-Locking of A 2.7 Terahertz Quantum Cascade Laser to a Mode-Locked Er-Fiber Laser
Santarelli, Giorgio ¹; Barbieri, Stefano ²; Gellie, Pierre ²; Ding, Lu ²; Maineult, Wilfried ²; Sirtori, Carlo ²; Colombelli, Raffaele ³; Beere, Harvey ⁴; Ritchie, David ⁴

¹LNE-SYRTE, Observatoire de Paris (FRANCE); ²MPQ, Université Paris 7 (FRANCE); ³IEF, Université Paris Sud (FRANCE); ⁴Cavendish Laboratory (UNITED KINGDOM)

Cold Atom Rotation Sensor

Berg, Peter ; Gilowski, Michael ; Schubert, Christian ; Tackmann, Gunnar ; Wendrich, Thijs ; Ertmer, Wolfgang ; Rasel, Ernst Maria
Institut für Quantenoptik, Leibniz Universität Hannover (GERMANY)

Interpolation of TW Time Transfer from Measured Points onto Standard MJD for UTC Generation

Jiang, Zhiheng
Bureau International des Poids et Mesures (BIPM) (FRANCE)

New Time Scale at the Royal Observatory of Belgium

Sharma, Suman ; Defraigne, Pascale
Royal Observatory of Belgium (BELGIUM)

Precise Point Positioning: Implementation of the Constrained Clock Model and Analysis of its Effects in

T/F Transfer

Cerretto, Giancarlo¹ ; Lahaye, François² ; Tavella, Patrizia³ ; Vitrano, Sergio⁴
¹INRIM - Politecnico di Torino (DISPEA) (ITALY); ²NRCAN (CANADA); ³INRIM (ITALY); ⁴Politecnico di Torino (ITALY)

Study on the Precision of Long Baseline TWSTFT Links via Two Separated Transponder on One Telecommunication Satellite

Zhang, Hong¹ ; Li, Huanxin¹ ; Jiang, Zhiheng²
¹National Time Service Center, Chinese Academy of Sciences (CHINA); ²Bureau International des Poids et Mesures (FRANCE)

Requirements on GNSS Receivers from the Perspective of Timing Applications

Defraigne, Pascale¹ ; Uhrich, Pierre² ; Petit, Gérard³ ; Aerts, Wim¹
¹Royal Observatory of Belgium (BELGIUM); ²3LNE-SYRTE, LNE, CNRS, UPMC, Observatoire de Paris (FRANCE); ³Bureau International des Poids et Mesures (FRANCE)

Maintenance of UTC(MIKE) in Finland by using a Delay Generator as a Micro Stepper

Mansten, Tapio ; Kalliomaki, Kalevi ; Iisakka, Ilkka ; Merimaa, Mikko
MIKES (FINLAND)

Experimental Analysis of the Time Transfer Capability of Compass I

Yang, Zhiqiang
Beijing Institute of Radio Metrology and Measurement (CHINA)

GPS Receiver Relative Calibration Campaign Preparation for Galileo In-Orbit Validation

Uhrich, Pierre ; Valat, David
LNE-SYRTE, LNE, CNRS, UPMC, Observatoire de Paris (FRANCE)

Linear Combination Model for Atomic Clock Prediction

Wang, Jigang ; Hu, Yonghui
National Time Service Center (CHINA)

New Technologies for Laser Time Transfer and their Possible Application in the Galileo Program

Prochazka, Ivan¹; Schreiber, Ulrich²; Schäfer, Wolfgang³; Cacciapuoti, Luigi⁴

¹Czech Technical University in Prague (CZECH REPUBLIC); ²BKG & Technical University Munich (GERMANY); ³Time Tech GmbH (GERMANY); ⁴European Space Agency, ESA (NETHERLANDS)

Development Status and Experimental Plan of Time Management System of Satellite Positioning System using QZSS

Takahashi, Yasuhiro¹; Amagai, Jun¹; Fujieda, Miho¹; Nakamura, Maho¹; Aida, Masanori¹; Nakazawa, Isao¹; Hama, Shin'ichi¹; Noda, Hiroyuki²; Kishimoto, Motohisa²; Yahagi, Yukihiro³; Horiuchi, Satoshi⁴; Takahashi, Tamaki⁴

¹NICT (JAPAN); ²JAXA (JAPAN); ³NEC Engineering (JAPAN); ⁴NEC (JAPAN)

Results of Evaluation of Time Signals Receiving from NTP Servers in Poland

*Dobrogowski, Andrzej ; Jessa, Mieczyslaw ; Kasznia, Michal ; Lange, Krzysztof
Poznan University of Technology (POLAND)*

Research on the Technology of Common-View Based on the Chinese Area Positioning System

Wu, Jianfeng ; Hu, Yonghui ; Ma, Hongjiao ; Jing, Wenfang

National Time Service Center, Chinese Academy of Sciences (CHINA)

Characterization of GNSS frequency transfer by comparison to optical fiber links

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15:40 Coffee break

Session 17 - ACES

16:10 ACES Status at Completion of the Engineering Models Phase

Cacciapuoti, L.¹; Much, R.¹; Feltham, S.¹; Nasca, R.¹; Vudali, T.¹; Hess, M.P.²; Stringhetti, L.²; Salomon, C.³

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16:30 Development of the Space Active Hydrogen Maser for the Aces Mission

GOUJON, Didier¹; Rochat, Pascal¹; Mosset, Pierre¹; Boving, Daniel¹; Perri, Antonio¹; Rochat, Julien¹; Ramanan, Neetha¹; Simonet, Didier¹; Vernez, Xavier²; Perruchoud, G  rald³

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16:50 Frequency Accuracy Evaluation of the Pharao Space Clock on Ground
*Laurent, Philippe*¹; *Abgrall, Michel*¹; *Clairon, André*¹; *Léger, Benoît*²; *Picard, Frédéric*²
¹LNE-SYRTE, Observatoire de Paris (FRANCE); ²CNES (FRANCE)

17:10 Results of the ACES EM System Test
*Hess, Marc Peter*¹; *Stringhetti, Luca*¹; *Cacciapuoti, Luigi*²; *Feltham, Steve*²; *Much, Rudolf*²; *Vudali, Tahsin*²; *Salomon, Christophe*³; *Laurent, Phillippe*⁴; *Benoit, Leger*⁵; *Delaroche, Christophe*⁵; *Massonnet, Didier*⁵; *Picard, Frederic*⁵; *Hejc, Gerhard*⁶
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17:30 Closing Session

Friday, 16 April 2010

Visit of ESTEC Facilities