

## Workshop Agenda: Monday, October 27

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### Session 01: Welcome

Stephen Merkowitz/NASA GSFC, Chair  
Michael Pearlman/SAO, Co-Chair

09:00-09:50 Workshop Welcome and Introduction

Stephen Merkowitz, Manager, NASA Space Geodesy Project  
Michael Pearlman, Director, ILRS Central Bureau  
Giuseppe Bianco, Chair, ILRS Governing Board  
Hansjörg Kutterer, Chair, GGOS Coordinating Board  
Dr. Jack Kaye, Associate Director for Research, Earth Science Division, NASA Headquarters  
Dr. Colleen Hartman, Acting Director, Sciences and Exploration Directorate, NASA Goddard Space Flight Center  
Dr. John Kress, Interim Under Secretary for Science, Smithsonian Institution  
Dr. Charles Alcock, Director, Smithsonian Astrophysical Observatory

09:50-10:00 J. McGarry, C. Noll, Workshop Logistics

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### Session 02: Historical Perspectives

Michael Pearlman/SAO, Chair  
John Degnan, Co-Chair

10:00-10:20 H. Plotkin/NASA GSFC retired,  
Genesis of Laser Satellite Tracking at the NASA Goddard Space Flight Center (3128)

10:20-10:40 C. Lundquist/University of Alabama in Huntsville,  
Evolution of Optical Satellite Tracking (3019)

10:40-11:00 *Break*

11:00-11:20 G. Veis/National Technical University of Athens,  
From Optical Tracking to Laser Tracking - The Early Years of Satellite (3023)

11:20-11:40 F. Barlier/Observatoire de la Cote d'Azur, Early Satellite Laser Ranging for Geodesy at CNRS, CNES and ONERA in France (3108)

11:40-12:00 J. Bosworth/NASA GSFC,  
The NASA Crustal Dynamics Project's Use of Satellite Laser Ranging to Meet its Multiple Objectives (3132)

12:00-12:20 J. Faller/JILA,  
Lunar Laser Ranging (3127)

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12:30-13:30 *Lunch*

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### Session 03: Science through Missions

Giuseppe Bianco/ASI, Chair  
Graham Appleby/NERC Space Geodesy Facility, Co-Chair

13:30-13:50 G. Neumann/NASA GSFC  
Interplanetary Spacecraft Laser Ranging: The Quest for 1 AU (3143)

13:50-14:10 P. Exertier/CNRS-UNS-OCA  
Time Transfer by Laser Link (T2L2) : A Way to Synchronize Laser Ranging Observatories at the ns Level (3083)

14:10-14:30 G. Beutler/Astronomical Institute of Bern  
GNSS for Positioning, Navigation, Timing, and Science (3135)

## Workshop Agenda: Monday, October 27 (continued)

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### Session 03: Science through Missions

- 14:30-14:50 R. Beard/Naval Research Laboratory  
The NAVSTAR 35 and 36 Laser Retro-reflector Experiments (3142)
- 14:50-15:10 B. Tapley/University of Texas/CSR  
Space Geodesy Contributions to Gravity Model Development (3129)
- 15:10-15:40 *Group Photo*
- 15:40-16:10 *Break*
- 16:10-16:30 Z. Altamimi/Institut National de l'Information Géographique et Forestière  
ITRF 2013 Analysis and SLR Contribution (3035)
- 16:30-16:50 J.P. Berthias/CNES  
SLR and Altimetry: A Success Story and a Lasting Partnership (3153)
- 16:50-17:10 B. Schutz/University of Texas/CSR  
The NASA Ice, Cloud and land Elevation Satellite (ICESat) Series: Science, Data Products and Operations (316X)
- 17:10-17:30 T. Murphy/University of California San Diego  
Lunar Laser Ranging: Science and Status (3057)
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### Poster Set-up

- 17:30-18:00 *Governor Calvert House Atrium*
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### Icebreaker Reception

- 18:00-21:00 *Governor Calvert House Atrium*
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## Workshop Agenda: Tuesday, October 28

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### Session 04: SLR and Service Organizations

Carey Noll/NASA GSFC, Chair

- 08:00-08:15 G. Bianco/Agenzia Spaziale Italiana  
The International Laser Ranging Service: Past, Present and Future
- 08:15-08:30 H.J. Kutterer/Federal Agency for Cartography and Geodesy (BKG)  
GGOS and the Importance of the Combination of Space Techniques (3164)
- 08:30-08:45 P.E.O. Opseth/Norwegian Mapping Authority  
Status in the UN-GGIM Initiative on a Resolution for a Global Geodetic Reference Frame (3026)
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### Session 05: The Role of SLR in the Terrestrial Reference Frame Development

Erricos Pavlis/UMBC, Chair  
Vincenza Luceri/e-GEOS S.p.A, ASI/CGS Matera, Co-Chair

- 09:00-09:15 V. Luceri/e-GEOS S.p.A, ASI/CGS Matera  
The ILRS Contribution to the Development of ITRF2013 (3157)
- 09:15-09:30 E. Pavlis/UMBC  
Modeling Improvements in the ILRS Reprocess for ITRF2013 Using the LAGEOS Satellites to Assess the Accuracy of ILRS Stations (3146)
- 09:30-09:45 G. Appleby/NERC BGS  
Using the LAGEOS Satellites to Assess the Accuracy of ILRS Stations' Observations During The Last Decade (3052)
- 09:45-10:00 S. Kopeikin/University of Missouri  
Relativistic Aspects of SLR/GPS Geodesy (3144)
- 10:00-10:15 D. Thaller/BKG  
Pre-Combined GNSS-SLR Solutions for the ITRF2013 (3079)
- 10:15-10:30 F. Deleflie/GRGS  
Impact of 25 Years of Etalon-1 and Etalon-2 Data (3081)
- 10:30-11:00 *Break*
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### Session 06: The Role of SLR in Gravitational Earth Modeling

Horst Müller/DGFI, Chair  
Shinichi Nakamura/JAXA, Co-Chair

- 11:00-11:15 J. Ries/University of Texas at Austin  
Satellite Laser Ranging Applications for Gravity Field Determination (3117)
- 11:15-11:30 R. Gross/JPL  
Mass Transport and Dynamics in the Earth System (3015)
- 11:30-11:45 K. Matsuo/Kyoto University (T. Otsubo/Hitotsubashi University)  
Geocenter Motion Driven by Large-Scale Mass Redistribution (3088)
- 11:45-12:00 L. Petrov/ADNET Systems, Inc.  
The Use of Numerical Weather Models for SLR Data Analysis (3011)
- 12:00-12:15 W. Qu/Shanghai Astronomical Observatory, CAS  
The Study on the Coefficients of the Earth's Gravity Using Scaled Sensitivity Matrix Method (3002)
- 12:15-12:30 R. Govind/University of Cape Town  
Assessing Orbit Quality Using SLR (3110)

## Workshop Agenda: Tuesday, October 28 (continued)

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12:30-13:30 *Lunch*

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### Session 07: *Advanced Technologies I*

Zhongping Zhang/Shanghai Astronomical Observatory, CAS, Chair  
John Degnan/Sigma Space Corp., Co-Chair

- 13:30-13:45 Z. Fan/NAO, CAS (Z. You/NAO, CAS)  
Millijoules High Master-Slave Pulse Ratio 532 nm Picosecond Laser (3126)
- 13:45-14:00 T. Murphy/University of California San Diego  
TBAD: Transponder-Based Aircraft Detector (3058)
- 14:00-14:15 I. Blinov/FSUE VNIIFTRI (I. Ignatenko)  
Metrological Provision of Uniformity of Measurements of Time and Frequency in the Satellites Laser-Ranging Systems (3041)
- 14:15-14:30 M. Sadovnikov/OJC "RPC "PSI"  
SLR Station of the New Generation for Time Transfer with Sub-nanosecond Accuracy and Ranging with Sub-millimeter Accuracy in Night and Daytime (3025)
- 14:30-14:45 Z. Zhang/Shanghai Astronomical Observatory, CAS  
Laser Measurement to Space Targets by Using Dual-Receiving Telescopes and Transmitted from One of Systems (3032)
- 14:45-15:00 A. Kloth/SpaceTech GmbH  
Development of a Full SLR Software Stack Based on Real-Time Linux and a New Version of the Potsdam Range Gate (3089)
- 15:00-15:30 *Break*

### Session 08: *Advanced Technologies II*

Georg Kirchner/Austrian Academy of Sciences, Chair  
Matt Wilkinson/NERC Space Geodesy Facility, Co-Chair

- 15:30-15:45 M. Wilkinson/NERC Space Geodesy Facility  
Upgrading kHz SLR at the SGF, Herstmonceux (3104)
- 15:45-16:00 J. Degnan/Sigma Space, Inc.  
A Proposed Multifunctional Multichannel Receiver for SGSLR (3020)
- 16:00-16:15 Z. Li/Yunnan Observatories, CAS  
The Research of Rotating Shutter Control Method for 1.2m Telescope SLR System (3051)
- 16:15-16:30 S. Riepl/BKG  
First Results from the Satellite Observing System Wettzell (3131)
- 16:30-16:45 C. Courde/Laboratoire Geoazur/OCA  
Ideas of New Technological Developments for Future French SLR Stations (3091)
- 16:45-17:00 E. Hoffman/GFZ  
Upgrades and New Capabilities of the GFZ SLR Timing System (3085)  
Modernization and Characterization of the Riga SLR Timing System (3086)
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### Working Group Meetings

- 17:00-18:30 Missions Working Group Abram Claude Room  
18:30-20:00 Networks and Engineering Working Group Abram Claude Room
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## Workshop Agenda: Wednesday, October 29

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### Buses Depart

07:00 *Governor Calvert House*

### Buses Arrive

07:45 *NASA GSFC Visitor Center*

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### Tours of NASA Goddard Space Flight Center (GSFC) and Goddard Geophysical and Astronomical Observatory (GGAO)

08:30-11:30

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11:30-12:30 *Lunch provided in Building 8 Auditorium*

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### Tours of NASA Goddard Space Flight Center (GSFC) and Goddard Geophysical and Astronomical Observatory (GGAO) Continue

12:30-15:00

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15:00-15:30 *Break in Building 8 Auditorium*

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15:30-15:45 Joint GSFC Engineering and Scientific Colloquium  
Welcome: Chris Scolese, Director, NASA Goddard Space Flight Center

15:45-17:00 John Degnan/SigmaSpace, NASA GSFC Retired  
A Celebration of Fifty Years of Satellite Laser Ranging

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### Buses Depart

17:00 *NASA GSFC Building 8 Auditorium*

### Buses Arrive

18:00 *Governor Calvert House*

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### Poster Viewing Reception

18:30-21:30 *Governor Calvert House Atrium*

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## Workshop Agenda: Thursday, October 30

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### Session 09: Networks and Core Sites

Michael Pearlman/SAO, Chair  
Stephen Merkowitz/NASA GSFC, Co-Chair

- 08:00-08:15 M. Pearlman/SAO  
The Role of CORE and Co-location Sites and the Activities Underway to Improve the Global Space Geodesy Network (3044)
- 08:15-08:30 M. Sadovnikov/OJC "RPC "PSI"  
Stages of Development of Stations, Networks and SLR Usage Methods for Global Space Geodetic and Navigation Systems in Russia (3068)
- 08:30-08:45 Z. Zhang/Shanghai Astronomical Observatory  
The Status and Plan of the Chinese SLR Network (3165)
- 08:45-09:00 J. McGarry/NASA GSFC  
Developing and Deploying NASA's Space Geodesy Satellite Laser Ranging (SGSLR) Systems (3018)
- 09:00-09:15 T. Varghese/Cybioms  
Testing and Benchmarking the NASA SGSLR Systems at the 1mm Level Prior to Field Deployment (3119)
- 09:15-09:30 J. Esper/NASA GSFC  
NASA's Next Generation Space Geodesy Network Typical Core Site Requirements and Layout (3151)
- 09:30-09:45 P. Opseth/Norwegian Mapping Authority  
Status of the Establishment of a Core Site in Ny-Ålesund (3027)
- 09:45-10:15 *Break*
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### Session 10: New Applications: Space Debris

Chris Moore/Electro Optic Systems Pty Ltd, Chair  
Ivan Prochazka/Technical University of Prague, Co-Chair

- 10:15-10:30 B. Greene/Space Environment Research Centre  
Laser Ranging for the Precision Orbit Determination and Remote Maneuver of Space Debris (3094)
- 10:30-10:45 H. Wirnsberger/Austrian Academy of Sciences  
Space Debris Orbit Predictions using Bi-static Laser Observations. Case Study: ENVISAT (3017)
- 10:45-11:00 G. Kirchner/Austrian Academy of Sciences  
Infrared Laser Ranging to Space Debris – a Chance for ILRS (3009)
- 11:00-11:15 S. Lakshminarayana/Rajasthan Institute of Engineering and Technology  
Send off to Space Debris using LASER Techniques (3003)
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### Session 11: New Applications: Time Transfer

Pierre Exertier/OCA/CERGA/GRGS, Chair  
Hiroo Kunimori/NICT, Co-Chair

- 11:15-11:30 A. Schlicht/Technische Universität München  
Concept for a Geodetic and Time Reference in Space (3075)
- 11:30-11:45 I. Prochazka/Czech Technical University in Prague  
Calibration of SLR System Delays for the European Laser Timing Reaching 20 ps Accuracy (3006)
- 11:45-12:00 J. Kodet/ Technische Universität München  
SLR and GNSS Co-location and Delay Control for the Application of Laser Time Transfer (3005)

## Workshop Agenda: Thursday, October 30 (continued)

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12:00-13:00 *Lunch*

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### Session 12: From GNSS to Lunar

Andrey Sokalov/OJC "RPC "PSI", Chair  
Scott Wetzel/HTSI, Co-Chair

- 13:00-13:15 M. Pearlman/SAO  
Early Results from New Initiatives on SLR Tracking of GNSS and Synchronous Satellites (3114)
- 13:15-13:30 A. Sokolov/OJC "RPC "PSI"  
New ideas in retroreflector array development (3024)
- 13:30-13:45 L. Thomas/Naval Research Laboratory  
Status of the GPS III Laser Retroreflector Array (3053)
- 13:45-14:00 S. Kasho/JAXA  
Accuracy Evaluation of QZS-1 Precise Ephemerides with Satellite Laser Ranging (3067)
- 14:00-14:15 A. Boni/INFN-LNF  
Thermal and Optical characterization of a GNSS Retroreflector Array at the SCF Lab (3082)
- 14:15-14:30 K. Sosnica/University of Bern  
Processing 20 Years of SLR Observations to GNSS Satellites (3070)
- 14:30-15:00 *Break*
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### Session 13: Lunar Laser Ranging

Jürgen Müller /Leibniz Universität Hannover, Chair  
Ludwig Combrink/HRAO, Co-Chair

- 15:00-15:15 C. Courde/Laboratoire Geoazur/OCA  
French LLR Station Status and New Project (3016)
- 15:15-15:30 J. Müller/Leibniz Universität Hannover  
Earth Orientation and Relativity Parameters Determined from LLR Data (3033)
- 15:30-15:45 M. Martini/INFN  
Test of General Relativity Using Lunar Laser Ranging Data and the Planetary Ephemeris Program (3148)
- 15:45-16:00 A. Bourgoin/Observatoire de Paris/SYRTE  
New dynamical relativistic modeling of the Moon in POLAC group (SYRTE, Observatoire de Paris) (3092)
- 16:00-16:15 D. Currie/University of Maryland  
Atmospheric Effects and the Ultimate Ranging Accuracy for Lunar Laser Ranging (3055)
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### Session 14: Planetary and Transponder Ranging

Ulrich Schreiber/BKG/Geodaetisches Observatorium Wettzell, Chair  
Jan McGarry/NASA GSFC, Co-Chair

- 16:15-16:30 S. Bauer/DLR  
Application of one-way laser ranging data to LRO into orbit determination (3124)
- 16:30-16:45 D. Dirkx/Delft University of Technology  
Simulated Comparative Analysis of One- and Two-Way Planetary Laser Ranging Systems (3101)

## Workshop Agenda: Thursday, October 30 (continued)

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### Session 14: Planetary and Transponder Ranging

16:45-17:00 S. Dell’Agnello/INFN-LNF  
NASA-SSERVI and INFN Partnership “Springlets”: Solar system Payloads of laser Retroreflectors of INfn for General reLativity, Exploration and planeTary Science (3100)

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### Working Group Meetings

17:00-18:30	Data Formats and Procedures Working Group	Abram Claude Room
17:00-18:30	Transponders Working Group	Rebecca Grand

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### Workshop Banquet

19:00-22:00 *Pusser’s Caribbean Grille*

Keynote Speaker: Dr. Piers Sellers/NASA GSFC  
Deputy Director, Sciences and Exploration Directorate, NASA Astronaut

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## Workshop Agenda: Friday, October 31

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### Session 15: Operations

Toshimichi Otsubo/Hitotsubashi University, Chair  
David McCormick/NASA GSFC, Co-Chair

- 08:00-08:10 R. L. Ricklefs/University of Texas at Austin  
ILRS Station Configuration Tracking (3123)
- 08:10-08:20 T. Otsubo/Hitotsubashi University  
Two-fold Quality Assessment of Global SLR Data (3036)
- 08:20-08:30 M. Wilkinson/NERC Space Geodesy Facility  
Plotting NP range residuals - SGF web development (3125)
- 08:30-08:40 E. Pavlis/UMBC  
Station Performance Assessment Tools for the ILRS Stations (3160)
- 08:40-08:50 G. Appleby/NERC Space Geodesy Facility  
Satellite Interleaving and Real-time Normal Point Data-Quantity Monitoring (3059)
- 08:50-09:00 J. Woo/Excelis  
Station Procedures (3029)
- 09:00-09:10 J. Torre/OCA  
Station best practice and requests (3130)
- 09:10-09:20 G. Kirchner/Austrian Academy of Sciences  
SLR Calibration Issues - Example: Graz (3154)
- 09:20-09:30 I. Prochazka/Technical University of Prague  
Geometry bias in a short baseline ground calibration (3097)
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### Session 16: Workshop Closing

Michael Pearlman/SAO, Chair  
Jan McGarry/NASA GSFC, Carey Noll/NASA GSFC, Co-Chairs

- 10:00-11:00 Session Summaries  
11:00-12:00 Working Group Summaries  
12:00-12:30 Workshop Closing
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12:30-13:30 *Lunch*

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### Session 17: Station Clinics

David McCormick/NASA GSFC, Chair  
Toshimichi Otsubo/Hitotsubashi University, Co-Chair  
Jean-Marie Torre/OCA, Chair  
Mark Torrence/SGT, Co-Chair

- 13:30-15:00 Station Clinic I  
15:00-15:30 *Break*  
15:30-17:30 Station Clinic II
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17:30 *Workshop End*

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### Session 02: Historical Perspectives Posters

- C. Schwatke, Historical Development of the SLR Data Holdings at EDC Between 1976 and 2014 (3010)
  - J. Kosteletzky, 1970 - First Laser Ranging in the Czechoslovakia (3022)
  - E. Kattimuthu, 40 Years of SLR in India (Remembering the Past) (3034)
  - Ya. Blagodyr, History of the "Lviv-1831" SLR station at Lviv, Ukraine (3039)
  - C. Noll, Satellite Laser Ranging Tracking Through the Years (3046)
  - M. Abele, Satellite Laser Ranging in the University of Latvia since 1975 (3102)
  - M. Ploner, History of the Laser Observations at Zimmerwald (3116)
  - P. Dunn, Arequipa's Contribution to the ILRS Network (3121)
  - P. Yanyachi, Arequipa Satellite Tracking Station (3122)
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### Session 05 and 06: Science Posters

- A. Pacheco, Earth Orientation Parameters (EOP's) using SLR data from ILRS 7406 station at San Juan - Argentina (3013)
  - E. Park, Preliminary Performance Analysis for the Korean SLR Station "DAEDEOK-73592601" (3064)
  - Y. Kim, Precise Orbit Determination and Measurement Bias Analysis for Starlette with Satellite Laser Ranging of The Korean SLR Station "DAEDEOK-73592601" (3071)
  - K. Sosnica, Earth Rotation and Gravity Field Parameters from Satellite Laser Ranging (3072)
  - M. Bloßfeld, LOD systematics from SLR observations (3074)
  - K. Ebauer, Impact of Atmospheric Effects on SLR-derived Parameters (3078)
  - K. Ebauer, Geodetic Parameters Estimation from Processing of LAGEOS and LEO SLR Data (3080)
  - I. Fausk, Combining SLR with VLBI, DORIS and GPS in the GEOSAT Software (3096)
  - P. Dunn, Etalon and Ajsai Observations from NASA's SLR Network (3138)
  - D. Kucharski, Submillimeter SLR: Ajsai as the Zero-Signature Geodetic Satellite (3021)
  - T. Otsubo, Systematic Range Error 2013-2014 (3141)
  - D. Lucchesi, Testing Fundamental Physics with Satellite Laser Ranging: Perspectives and Goals of the LARASE Experiment (3109)
  - E. Tcyba, Associate Analysis Center of VNIIFTRI (3103)
  - X. Wang, Introduction on ILRS SHAO Analysis Center and Products (3112)
  - H. Oh, Orbit Determination of Korea Regional Navigation Satellite System by Using Satellite Laser Ranging (3145)
  - P. Yanyachi, Laser Ranging and GPS Measurements to Misti, Chachani, Pichu Pichu Volcanoes and Surrounding Hills, and Applications of Precise Positioning to Monitoring of Volcanic Deformation and Seismic Risk (3155)
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### Sessions 07 and 08: Advanced Technologies Posters

- L. Combrinck, Development of a High Accuracy, User Friendly Lunar Laser Ranging Telescope Steering and Pointing Software Package at HartRAO (3004)
  - I. Prochazka, Dark Count Rate Reduction of the SPAD Detection Package for SLR (3007)
  - R. Ricklefs, Software Reuse in the ILRS Network (3008)
  - S. Ndlovu, An Estimation of the Number of Expected Returned Photons for the HartRAO Lunar Laser Ranging System (3012)
  - H. Zhang, The Research on Key Technology of 1064nm Wavelength SLR and Measurement Experiment (3030)
  - A. Goncharov, The Laser Station Synchronization and Reference Frequency System and Its Metrological Support (3042)
  - D. Arnold, Final Transfer Function of the LARES retroreflector array (3047)
  - M. Choi, Development of the Automatic Transmitter/Receiver Alignment System (ATRAS) for ARGO-M (3063)
  - J. Näränen, A New Toolset for Passive Monitoring of Air Traffic and Sky Conditions at Metsähovi Station, Finland (3073)
  - S. Bang, A-RGG development for 10 kHz Laser Ranging of Daedeok station (3077)
  - V. Vedin, New USB version of the Riga Event Timer and additional Software Support for Linux (3098)
  - M. Wilkinson, ADS-B in-Sky Safety - Making Listen2Planes Package Available to Download (3099)
  - C. Clarke, Background Noise Suppression for Increased Data Acceptance (3118)
  - J. Horvath, Automating NASA's Space Geodesy Satellite Laser Ranging (SGSLR) Systems (3136)
  - C. Moore, Laser Development for Kilohertz Ranging at the US Naval Research Laboratory (3149)
  - R. Preston, Analysis of ILRS data from STPSat-2 Retro-reflector (3156)
  - H. Kunimori, Range Gate Generator with Pulse Position Modulation Capability (3159)
  - J. Kilmer, Lasers for Satellite Laser Ranging (SLR) Applications (3162)
  - V. Vasiliev, Retroreflector Using a Birefringent Wedge for Efficient Velocity Aberration Compensation (3167)
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## Posters (continued)

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### Session 09: Networks and Core Sites Posters

- R. Podestá, Local Ties to Determine the Co-location Vector from the SLR Telescope and GPS Antenna in San Juan, Argentina (3014)  
C. Noll, SLR, GNSS, VLBI, and DORIS Networks: ILRS+IGS+IVS+IDS (3048)  
A. Raja-Halli, Progress Report on the New SLR System of GGOS's Core Site Metsähovi, Finland (3090)  
J. Cheek, SGSLR Computer Design (3093)  
G. Appleby, Relative Height Surveying of Geodetic Monuments at the SGF Herstmonceux, UK (3105)  
S. Merkwitz, NASA's Next Generation Space Geodesy Network (3150)
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### Session 10: New Application: Space Debris Posters

- M. Shappirio, Tracking Orbital Debris in a Busy Airspace Environment (3115)  
Q. Li, Space Debris Laser Ranging at Yunnan Observatories (3049)  
C. Liu, Laser Ranging on Space Debris with the Changchun SLR station (3066)
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### Session 11: New Applications: Time Transfer Posters

- D. Mao, Time-transfer Experiments Between Satellite Laser Ranging Ground Stations via One-Way Laser Ranging to the Lunar Reconnaissance Orbiter (3060)  
C. Courde, Comparison Campaigns of Time Transfer Techniques Between Calibrated Observatories (3161)
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### Session 12: From GNSS to Lunar Posters

- Zhao Chunmei, BDS Satellite Orbit and Clock Determination based on MGEX Data (3037)  
X. Hani, Daylight Tracking GNSS in the Changchun SLR station (3065)  
D. Currie, Science Trades for Weight and Deployment of the LLRRA-21 (3106)  
V. Glotov, Some Results of the GLONASS SLR Data Analysis in IAC PNT (3140)  
S. Dell'Agnello, "Laser Ranging to Galileo", an ASI-INFN Project of the Italian Ministry of Research (3147)
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### Session 13: Lunar Laser Ranging Posters

- Yu. Kokurin, LLR (Lunar Laser Ranging) in the Physical Institute of the USSR Academy of Sciences (3040)  
M. Aimar, ODISSEE, a Promising Tool for Lunar Laser Ranging (3113)
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### Session 14: Planetary and Transponder Ranging Posters

- D. Dirx, Influence of Atmospheric Turbulence on Planetary Transceiver Laser Ranging (3087)  
D. Mao, Summary of Ground Station Performance in 5 years of Laser Ranging Operation to Lunar Reconnaissance Orbiter (3158)
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### Session 15: Operations Posters

- J. Woo, Developments at the NASA SLR OC (3028)  
Z. Wu, Current status in Shanghai SLR station (3031)  
F. Qu, Comparison of Different Frequency Laser Ranging (3038)  
C. Noll, Recent CDDIS Developments (3043)  
C. Noll, The ILRS Website's Site Log Viewer Application (3045)  
Y. Xiong, The Status and Plans of Satellite Laser Ranging at Yunnan Observatories (3050)  
J. Griffiths, Preliminary Bias Estimates for SLR Observations at Stafford, Virginia (3054)  
W. Smith, Status of SLR upgrades at the U.S. Naval Research Laboratory's Optical Test Facility (3056)  
R. Carman, Remote Control and Safety Upgrades at the Yarragadee MOBLAS-5 Station (3069)  
S. Yu, Daekdeok Station Receive Optical System Upgrade (3076)  
F. Deleflie, Dissemination of SLR data-related products through a Virtual Observatory: developments 2014-2015 (3084)  
J. del Pino, A Format Proposal for Reporting SLR-Airspace interaction Events (3107)  
J. del Pino, A Spreadsheet Tool for the Visualization of Long Term Calibration Series Parameters (3111)  
C. Moore, Start Detector Time Walk Compensation (3133)

## Posters (continued)

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### Session 15: Operations Posters

J. Luck, The Importance of Minicos (3134)

Y. Kim, A Status Report on KASI Prediction Center (KAS) (3137)

E. Pavlis, A Multi-platform Package for the Visualization of the ILRS QC Reports (3139)

M. Torrence, The ILRS "Global Report Card" (3163)

J. Woo, Tracking Statistics for High Performing SLR Stations (3166)

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### Session 18: New Applications: Laser Communications (Poster Only)

G. Vallone, Quantum Communications Demonstrated For Satellite Downlink At MLRO (3062)

D- Phung, DOMINO: Laser Communication Between SOTA, Onboard SOCRATES Satellite, and MEO Optical Ground Station (3095)

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