International Laser Ranging Workshop Programs (1998-2013)

11th: Deggendorf, Germany, September 21-25, 1998

1. Space Geodetic Technologies
2. Scientific Achievements, Applications, and Future Requirements in Space Geodesy
3. Data Analysis and Models
4. New or Upgraded Stations
5. Lunar Laser Ranging
6. Target Design, Signature, and Biases
7. Atmospheric Correction and Multiwavelength Ranging
8. Advanced Systems
9. Detectors and Filters
10. Laser Technology Development
11. Timing Devices and Calibration
12. Automation and Control Systems (Session 1)
13. Automation and Control Systems (Session 2)
14. Station Performance Evaluation/Quality Control (Session 1)
15. Station Performance Evaluation/Quality Control (Session 2)
16. New Applications and Techniques
17. Special Topics

12th: Matera, Italy, November 13-17, 2000

1. Overview of Space Geodetic Technologies
2. Scientific Achievements, Applications, and Future Requirements in Space Geodesy
3. Data Analysis and Models
4. Lunar Laser Ranging
5. New or Upgraded Stations
6. Station Performance Evaluation/Quality Control
7. Target Design, Signature, and Biases
8. Timing Devices and Calibration
9. Atmospheric Correction and Multiwavelength Ranging
10. Detectors and Filters
11. Technology Development
12. Automation and Control Systems
13. Advanced Systems and Techniques
14. New Applications

13th: Washington D.C., USA, October 07-11, 2002

1. Scientific Achievements, Applications, and Future Requirements
2. Laser Technology Development
3. Improved or Upgraded Systems - Poster Session
4. Timing Devices
5. Detectors and Optical Chain Components
6. Automation and Control Systems
7. Lunar Laser Ranging
8. Station Performance Evaluation
9. System Calibration Techniques
10. Station Operational Issues
11. Target Design, Signatures, and Biases
12. Atmospheric Correction and Multiwavelength Ranging
13. Advanced Systems and Techniques
14. Surveying Primer (splinter session presentation by Jim Long)

14th: San Fernando, Spain, June 07-11, 2004

1. Welcome and Introduction
2. Scientific Achievements, Applications, and Future Requirements
3. Lunar Laser Ranging
4. Improved or Upgraded Systems - Poster Session
5. New Applications
6. Atmospheric Correction and Multiwavelength Ranging
7. System Calibration Techniques
8. Engineering and QC Analysis
9. Automation and Control
10. Targets, Signatures, and Biases
11. Advanced Systems and Techniques
12. Operational Issues

15th: Canberra, Australia, October 16-20, 2006

1. Science Products
2. Network Performance and Results
3. Lasers and Detectors
4. Altimetry
5. Kilohertz Systems
6. Timing Systems
7. Multiple Wavelength, Refraction
8. Telescopes, Stations, and Upgrades
9. Advanced Concepts; Time Transfer
10. Transponders
11. Uncooperative Targets
12. Software and Automation
13. LLR Systems
14. Targets and Return Signal Strength
15. Overflow, e.g., New Missions, Stations

16th: Poznan, Poland, October 13-17, 2008

1. Scientific Achievements, Applications and Future Requirements (Session 1)
2. Scientific Achievements, Applications and Future Requirements (Session 2)
3. The Role of Satellite Laser Ranging in the Global Geodetic Observing System
4. Network Performance and Results
5. Lunar and Interplanetary Laser Ranging
6. High Repetition-Rate Systems
7. Lasers, Detectors and Timers
8. Software and Automation
9. New and Upgraded Stations, Extended Facilities
10. Operational Issues and New Missions
11. Targets and Return Signal Strength
12. Advanced Systems and Techniques: Transponders, Altimeters, and Time Transfer

17th: Bad Koetzting, Germany, May 16-20, 2011

1. Science
2. Operations: Spatial and Temporal Coverage
3. Atmospheric Refraction Correction: Hardware and Modelling
4. SLR Techniques
5. Modeling and Bias Issues
6. Improving Ranging Accurac, Calibration and Local TiesI
7. Improving Ranging Accuracy, Calibration and Local Ties II
8. Introduction the Observatory Excursion
9. Improving Support for GNSS and Other Challenging Missions
10. Satellite Subsystems: Retroreflector Arrays
11. Interaction between Data-User and Stations
12. New Laser Ranging Technologies and Capabilities that must be Developed to Support Future Missions
13. Lunar Laser Ranging
14. In-Sky Laser Safety
15. System Automation
16. Posters

18th: Fujiyoshida, Japan, November 11-15, 2013

1. Data management, GGOS, Geodesy
2. Gravity, Earth Model, Reference Frame
3. Dara Quality and its Products, SLR Network
4. POD and its Application
5. Laser Time Transfer
6. Space Mission
7. SLR Technology and Synergy
8. SLR Technology and Safety
9. Moon & Deep Space
10. Retroreflectors (1)
11. Retroreflectors (2) and CoM
12. SLR Technology and Development, Misc.
13. Operational Aspects and Recent Progress

ILRS Technical Workshops Programs (2005-2012)

"Observations Toward mm Accuracy", Eastbourne UK, October 3-7, 2005

- What do analysts expect from the tracking network? What does the tracking network expect from analysts?
    - Analysis
- How good are our intertechnique site ties?
    - Site Stability
- Where are we in range measurement precision, accuracy and stability at the stations?
    - System Operations
    - Daytime and HEO Ranging
    - Timer Linearity and Developments
    - Quality Control
    - Software Comparisons
- How close are we to realising mm level array corrections?
    - Signal Processing
    - Restricted Tracking
    - Control Files
- How can we ensure that the network is ready for the challenges expected over the coming years?
    - Moving to kHz Ranging
    - New Prediction Technique
    - Network Collaboration
    - Transponders
    - Other Applications

"Challenges for Laser Ranging in the 21st Century", Grasse France, September 25-28, 2007

- What are the scientific challenges for future?
    - Scientific challenges for next decade review paper
    - Miscellaneous Scientific Achievements:
- Stations, operations and analysis collaborations to be developed in future?
    - Improved data analysis procedures and corrections
    - Working together: station operations and data analysis groups
- Technological challenges for the future?
    - Technology review paper
    - New related "laser ranging" space projects for tomorrow and next decade
    - Toward an Higher level of Automation for stations
- Chronometry and High repetition rate ranging today and tomorrow
    - Counters performance and calibrations - Upcoming Event Timers
    - Kilohertz SLR and more
- Projects, missions and stations tomorrow and next decades
    - Time transfer experiments
    - New and upgraded stations /collaborations for improving network
    - Laser Reflector Array for Challenging orbits
    - Technological Challenges with Data Format

“SLR Tracking of GNSS Constellations”, Metsovo Greece, September 14-19, 2009

- Impact of SLR Tracking on GNSS Constellations
- Science from SLR and GNSS (4 sessions)
- Scientific impact of SLR tracking of GNSS Constellations
- Operational issues
- Technology Challenges

“Satellite, Lunar and Planetary Laser Ranging: Characterizing the Space Segment”, Frascati Italy, November 05-09, 2012

1. Introduction
2. Ground Station Performance From Current Satellite Arrays
3. Satellite Signatures And Centre-Of-Mass Issues (Session 1)
4. Satellite Signatures And Centre-Of-Mass Issues (Session 2)
5. Laboratory Testing And Characterization
6. Ranging Experience On The Lunar Reflectors
7. Array And Corner Cube Manufacturers And Specifications & Space Debris
8. Novel Array Designs
9. Transponders And Receivers