Session 7:
Advances in laser ranging technology and new applications

Bullet
Summary

- Ulli Schreiber gave us an outline of how to see SLR as a practical realization of Einstein Synchronization.
- Bud Donovan described the gimbal telescope assembly for the SGSLR and challenges posed by the strict requirements of the invariant point knowledge in various conditions.
- Evan Hoffman gave an outline of the design of the range control electronics planned for SGSLR and their overall design philosophy.
- Pi Xiaoyu (Fu Honglin) described results of experiments using a superconducting nanowire single photon detector in satellite laser ranging. Advantages: low dark count, low dead time, high QE detector. Disadvantages: low total QE, thin fiber coupling need to be solved
- Ivan Prochazka spoke about using an Allan deviation measurement as a characterization of SLR stations in the aspect of start pulse, laser detector, event timer and calibration, showed the advantages of this measurement and techniques/hardware to minimize it.
- John Degnan described the advantages to single photon lidar in terms of spatial resolution and data rate, gave several in depth examples of Sigma Space lidars in action and their various uses.

- Johann Eckl showed the first results of Wetzell's new T/R switch designed for 1064 and 532 nm pulses, and showed verification of their event-timer upgrade. ELT ranging is feasible.
- Peiyuan Wang had shown a possible way how to upgrade an astronomical telescope for doing SLR measurement up to geostationary satellites using SP-DART.
- Georg Kirchner in his talk, announced intentions to construct a second SLR station at Graz without a Coude path and gave us an idea about possible future concepts of modular and flexible SLR systems.
- Luca Porcelli announced the complete laboratory thermo- vacuum- optical characterization of the 5th spare flight Galileo IOV LRA and the Lageos engineering model.
- Andreas Boerne presented us a wide range of laser systems, suitable for high accuracy SLR and also for space debris ranging.
- Daniel Hampf gave an overview of the current status of the DLR-Stuttgart SLR station and their future plans, such as "100 kHz Burst Mode Ranging".
- Yue Gao was talking about the EOS Pico-second pulse width and high repetition rate laser system for Satellite Laser Ranging (SLR) and their Nano-second pulse width and high power laser system for space debris tracking.