Session Summary Report

1. Session Name : SLR Technology and Development, Misc
2. Chairs : Hyung-Chul Lim (KASI) & Anja Schlicht (TUM)
3. Summary
   - 7 presentations
   - Recognition of current situation
     - Advanced timing and detecting technology to improve ranging accuracy
     - New CMOS camera for optical tracking satellites
     - Photon-counting technology can be applied to 3D imaging Lidar and space communication.
   - Topics
     - The possibility was addressed to implement kHz laser ranging into the monostatic SLR system using the rotating shutter.
     - The iCCD camera was replaced with sCMOS camera in Zimmerwald observatory which shows better performance in tracking satellites in the eccentric orbits and space debris.
     - The advanced photon-counting 3D imaging Lidar was introduced by Sigma Space Corp. The performance was demonstrated using aircraft for multiple applications(large scale surveying and surveillance …)

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- New achievements in detector and timing for time transfer and SLR. Sub-mm laser ranging and ps time transfer, 70% QE for space debris laser tracking
- Detector time delay is dependent on the signal intensity fluctuations, which can reduce the ranging accuracy. The strategy for the mitigation of intensity dependent detector delay was addressed by BKG.
- The A033-ET was upgraded in terms of time interval RMS resolution(<3ps), epoch variation in temperature(1-2ps/˚C) and epoch measurement rate (1MSPS, USB2 I/F).
- Laser, optics and electronics can be used for both laser communication and laser ranging. This conceptual design was addressed for the PPM optical communication and laser ranging system by NICT.

Issues

- The advanced timing and detecting technology can promise the GGOS requirements(1mm ranging accuracy)