Automation of Laser Ranging Systems

Session Summary

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Automation Session Summary (1 of 2)

- Nine total abstracts submitted
  - 7 oral and 2 poster
  - Topics included:
    - Increasing automation and issues maintaining automation during upgrades for operational systems (Zimmerwald, Wettzell)
    - Designing automation into new systems (SGSLR, Tochka)
    - Optimizing scheduling in support of automation
    - New link analysis for SLR systems (including scintillation for higher fidelity) in support of receiver hardware for automation
- Key points:
  - Zimmerwald is highly automated but automation must be maintained just like any other part of the system – as hardware and software change, so must their interfaces to the automation (Lauber).
  - SOS-W has automation going – continuing to add new features. For high repetition rate systems spiral scanning, even with narrow divergence, can work well for acquisition (Riepl).

Automation Session Summary (2 of 2)

- Key Points
  - Overview of what is needed for automation and the 3 pillars of Automation (Neidhardt):
    - System safety (including need for laser interruption to be separate from operational SW)
    - System monitoring
    - Observation scheduling and control
  - Schedule optimization is becoming increasingly important as more satellites are being tracked. Artificial intelligence techniques may lend themselves to the solution of this increasingly complicated problem (Steinborn).
  - New systems being designed should consider all parts of the system (hardware and software) in their automation designs. SGSLR is being designed for full automation along with an increased measurement performance (McGarry, Horvath).
  - Using a pixellated detector to close the tracking loop can provide fast acquisitions and optimized pointing for single photon detection systems (Degnan).
  - The station Tochka has been designed for a very high level of automation in order to handle the required data volume (Sadovnikov & Shargorodskiy).