Session 14: Planetary and Transponder Ranging Session Summary
Schreiber & McGarry

ORAL PRESENTATIONS

- S. Bauer showed progress in doing LRO orbit determination from the one-way LR ranges, but:
  - Difficult to separate ground station from spacecraft clock errors with only one-way ranges,
  - Looking to other information for constraining the estimations.

- D. Dirkx showed simulations for one-way versus two-way transponder ranging for two cases: (1) lunar orbiter, and (2) phobos lander:
  - One-way: need to estimate clock errors,
  - Two-way: more stable position with better accuracy than one-way,
  - For phobos lander, results show two-way is ~10x compared to one-way, and orders of magnitude better than current knowledge.

Session 14: Planetary and Transponder Ranging (continued)

ORAL PRESENTATIONS

- S. Dell'Agnello described the NASA-SSERVI and INFN partnership, which will develop technologies for LRAs for missions in the Solar System, including the Moon, Planetary Ranging (to planetary surface from orbiter), as well as GPS III and ILRS Earth orbiting missions.

POSTER PRESENTATIONS

- D. Dirkx looked at the influence of atmospheric turbulence on planetary laser ranging and found that the effects only substantially influence data quality when the ground turbulence is strong. Ensuring single photon detection mitigates the accuracy degradation due to turbulence.

- D. Mao gave a summary of the LRO-LR ground stations performance during the 5+ years of the LRO-LR investigation (June 2009 to September 2014).