

LLR & Targets/Signal Strength

Next time someone wishes you

“Many happy returns”...

...be sure to ask *how many*

LLR Session

- Tom Murphy et al.
 - APOLLO is online and producing millimeter data!
 - Innovations include
 - 4×4 APD array
 - 16-channel timing system, 15 ps performance, 4 kHz capability
 - big telescope!
 - Firmly into the multi-photon regime

Targets

- David Arnold
 - LARES and LAGEOS should have the same range correction
 - 425-850 nm LAGEOS correction about 2.8 mm over variety of vel. aber.
 - detailed analysis of Apollo array diffraction patterns
 - analytic look at hollow cube thermal performance
 - comparative analysis of retro arrays for high altitude satellites
 - presentation of Russian retroreflector measurements (Vasiliev)
 - thermal analysis of Glonass cubes in and out of sun
 - reference to Frascati facility for testing arrays in simulated environ.
 - concerns about SPAD multi-photon triggers → few-mm effects possible

Targets, cont.

- Giovanni Delle Monache
 - description of simulated space/earth/sun test facility for retro arrays
 - example thermal images of LARES sample array under test
 - far-field diffraction pattern capability
 - will test LAGEOS sample in near future
 - GPS array prelim test results
 - invitation for other tests
- Victor Shargorodsky et al.
 - two-layer nested glass sphere
 - 17 cm diameter, 7.5 kg, 100,000 m² at 532 nm
 - built, and currently measuring return pattern in various conditions
 - launch late 2007
 - possibility for two-color version of same concept

Return Strength

- Tom Murphy
 - see factor of 15–20 less signal from moon than calculated
 - careful consideration of diffraction patterns and other losses
 - suspect lunar dust
- John Luck & Chris Moore
 - Comparison of Optus-B and GPS return strengths
 - 12 pointings on each, close-by in sky
 - throwing out extremes, see 4.2 brightness ratio: GPS/Optus-B
 - correcting for $1/r^2$, cross section ratio 0.48 (theoretically 0.43)
 - viable technique for measuring cross-sections in-situ