Session Summary Report

1. Session (13) : **Lunar Laser Ranging**
2. Chairs : Jürgen Müller (Univ. Hannover)/Ludwig Combrinck (HartRAO)
3. Summary
   - 6 presentations, 2 posters (but some related talks/posters in other sessions)
   - Status: APOLLO now collocated with superconducting gravimeter
     McDonald (MLRS) requires PMT to continue LLR operations
     OCA to concentrate on LLR, LAGEOS, Etalon, T2L2
     Matera expected to contribute data more regularly
     HartRAO LLR station still under development
   - Moon is attractive in various ways
     - LLR: Technology and modeling improvements
     - Continued contributions to planetary ephemeris programs
     - General Relativity tests are unique
   - Major findings
     - Thermal effect on CCRs, zero returns during full Moon due to CCR optical divergence
     - LLR is a science tool – from relativity to Earth-Moon dynamics
     - Next steps in technology development (reflectors, observatories)
     - Weak station geometry and data gaps affect LLR results
     - More stations in Southern Hemisphere will improve results
     - To improve LLR accuracy, many improvements are required (modeling, specifically atmosphere, geophysical effects, also instrumentation, etc.) to move towards mm accuracy
   - Takeover items to next meeting
     - MLRS must be supported, still more science talks desired