Science Objectives and Status of the Next Generation Lunar Retroreflector

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The design performance of the Next Generation Retroreflector (NGR), also known as the Lunar Laser Ranging Array Retroreflector for the 21st Century and/or MoonLIGHT depends critically on a detailed thermal analysis to optimize the design. This consists of three phases. The first, which will be the primary focus of this talk, consists of optimizing the performance with respect to the physical parameters of the package, conductivity, emissivity and reflectivity of various elements. This will be the primary focus of this talk, illustrating some initially surprising results. The second consists of optimizing the parameters of the CCR (the back angle offsets) in the presence of phase 1 conclusions. The third phase consists or readdressing the physical parameters of the package at the optimized back angle offsets. Updates on other issues will be briefly addressed: future landing sites and the required of a new design for the NGR,

Current status of the Next Generation Retroreflector (NGR) will be described. This will address the current schedule and future landing sites. In addition, interesting effects that have been recently discovered concerning break-through in solid CCRs, thermal effects in the CCR that affect the return signals, detailed simulations of the effects of atmospheric propagation and a candidate for a low absorption high emissivity coating will be briefly considered.

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