An Overview of the *MoonRise* Lunar Sample Return Mission from the South Pole-Aitken Basin.

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Exploring the South Pole-Aitken (SPA) Basin is a high priority for lunar and solar-system science [1-3]. The high priority derives from its role in providing both a window to the interior of the Moon and a portal to the early history of the Solar System, especially relating to the heavy impact bombardment that occurred during the first ~600 my [4-6]. Recent remote-sensing missions such as Kaguya, Chandrayaan-1, and LRO provide a rich set of data about the SPA Basin from orbit; however, achieving the highest-priority science objectives requires sample return. Huge volumes of high resolution data from these recent missions play a key role in selecting the best potential sample locations which thus ensure very high likelihood of mission success. Science objectives for an SPA sample return mission fall into three categories: (1) testing the impact cataclysm hypothesis and the implications for the evolution of the Solar System, (2) understanding basin impact processes, and (3) improving our understanding of the Moon's crust and mantle, i.e., how the crust and mantle vary with depth and laterally on a global scale.

This paper will provide an overview of the MoonRise lunar sample return mission, which is currently funded to perform a phase A study as part of NASA's New Frontiers Program. The overview will include a high level description of the key mission elements, mission timeline, and flight system. In addition the paper will describe the lunar sample return site selection process and timeline which will include elements of lunar and solar system science community participation starting in Phase A, and throughout the project life cycle.

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