

Spectral analysis of the Apollo basin on the Moon

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Studies, e.g. [1,2], reveal that the South-Pole Aitken (SPA) basin is unique, particularly because it is the deepest basin on the Moon and might be expected to expose the lunar mantle [3]. The innermost part of SPA is rich in high Ca-pyroxenes, except for some central crater peaks, where low Ca-pyroxenes dominate. No extensive olivine-rich areas are observed, implying a mantle rich in low Ca-pyroxenes instead of olivine [1, 3, 4]. Furthermore, thorium anomalies have been discovered in two craters within Aitken basin [5]. Here, we focus on the spectral analysis of one of the most interesting impact crater inside SPA, the Apollo basin. Recently, [6] published a detailed geological map of the area surrounding Apollo basin (35.69°S, 151.48°W; D~524 km), using morphology, stratigraphy, crater size-frequency distribution measurements, and Clementine spectral data to define the unit. Our work explores data from the M3 imaging spectrometer onboard Chandrayaan-1 [7] for this region. These analyses are part of the PLANMAP project, and the integration of the spectroscopical information with the results from [6] will permit to produce highly informative geological maps of the Moon [8].

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References

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