

Crustal structures of major mercurian basins

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Mercury is the innermost planet in the solar system. Its surface resembles to the Moon, which is characterized with large number of impact basins, indicating an intensive bombardment history. From the data acquired by previous Mercury missions, the spatial distribution, relative age, and morphology of impact basins on Mercury is studied. Gravity data from NASA MESSENGER mission revealed the crustal structures of mercurian basins, providing information about the crust properties of the early Mercury when those basins formed. In this work, the crustal thickness ratio for each basin is calculated from global crustal thickness model obtained by inverting gravity data. The relation between crustal thickness ratio, basin relaxation state, and relative age is investigated and some implication for the early evolution of Mercury is discussed.

Keywords: crustal structures, impact basin, gravity anomaly

Crustal thickness

