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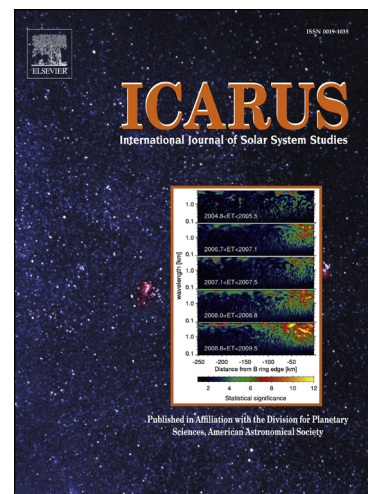
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Impact Vaporization as a Possible Source of Mercury's Calcium Exosphere

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Highlights

- We show that Mercury's calcium exosphere, which is observed to vary seasonally about that planet's orbit, can be attributed to impact vaporization by interplanetary dust.
- A comparison of models to MESSENGER observations shows that the seasonal variations in that Ca signal result from the planet's sizable orbital eccentricity and inclination which cause that planet to experience significant radial and vertical excursions through the interplanetary dust cloud.
- The model developed here also requires an additional source localized at $25\pm 5^\circ$ degrees after Mercury's perihelion, and that may be due to a meteor stream possibly associated with the nearby comet Encke.
- Impact vaporization can explain the source rate and true anomaly angle variations in the calcium exosphere but an additional mechanism must be invoked to explain the extreme temperature.

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