

EGU21-9083

<https://doi.org/10.5194/egusphere-egu21-9083>

EGU General Assembly 2021

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



Gravity Measurements of the Juno Spacecraft Matched with Jupiter Models that rely on a Dilute Core and Deep Winds

Burkhard Militzer¹, Sean Wahl¹, and William Hubbard²

¹(militzer@berkeley.edu)

²Lunar and Planetary Laboratory, University of Arizona, Tucson, AZ 85721, USA

Since its arrival at Jupiter in 2016, the Juno spacecraft has measured the planet's gravity fields with unprecedented precision. The interpretation of these measurements has been challenging because the magnitudes of the gravity coefficients J_4 and J_6 were smaller than predicted by traditional interiors models that included a dense inner core composed of rock and ice. Here we instead present models with dilute cores [Geophys. Res. Lett. 44 (2017) 4649] and deep-winds that conform to theoretical predictions of hydrogen-helium phase separation in the interior layer from approximately 0.8 to 0.85 Jupiter radii. Such models match the entire set of zonal gravity measurements by the Juno spacecraft. Our work is based on the accelerated version of the Concentric Maclaurin Spheroid method [Astrophysical J. **879** (2019) 78]. We conclude by comparing with models for Saturn's interior.