



## **Differential rotation in Jupiter from Juno measurements and interior models**

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Juno's highly accurate measurements of Jupiter's gravity field (the gravitational moments  $J_s$ ) enable for the first time to constrain differential rotation in the planet's deep interior. Because Jupiter's atmospheric winds are north-south asymmetric, the depth of the atmospheric zonal flow can be obtained from the measurement of odd  $J_s$ . We will show that the combination of even  $J_s$  and interior moments also yields a similar constraint: The  $J_s$  from interior models with different assumptions are highly correlated, especially the high order ones (e.g.,  $J_8$  vs  $J_6$  or  $J_{10}$  vs  $J_8$ ). On the other hand, the zonal flows affect these  $J_s$  in a very different way, with a magnitude that depends on their depth. We calculate a large number of possible interior models and, with the thermal wind relation, the effect of zonal flows on the  $J_s$ . We match these against the Juno measurements to infer the depth of the atmospheric flows. Furthermore, by using the decay profile for these flows obtained from the odd  $J_s$  and the interior models results, we can determine an upper limit to the amplitude of differential rotation in the deep interior.