

Abstract Submitted
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Zonal winds generated by tides MICHAEL LE BARS, PATRICE LE GAL, IRPHE - Aix- Marseille University, ANDREAS TILGNER, University of Goettingen — The fundamental role of tides in geo and astrophysics has been the subject of multiple studies for several centuries. Beyond the well known quasi periodic flows of ocean water on our shores, tides are also responsible for phenomena as varied as the intense volcanism on the Jovian satellite Io, or the synchronization of the Moon spin on its rotation around the Earth. We describe here a new phenomenon of zonal wind generation by tidal forcing. Following a recent theoretical and numerical analysis of Tilgner [1], we present the first experimental evidence that the nonlinear self-interaction of a tidally forced inertial mode can drive an intense axisymmetric flow in a rotating sphere. These results are relevant for zonal wind generation in planets and stars. [1] A. Tilgner, Zonal wind driven by inertial modes, *Phys. Rev. Lett.* **99**, 194501 (2007).

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