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Tidal viscosity of Enceladus

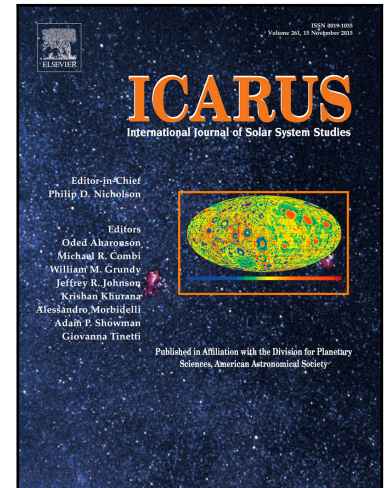
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Highlights

- Forced libration in longitude produces about 23 % of the tidal dissipation in Enceladus.
- Assuming that the Enceladean mantle behaves as a Maxwell body, we have calculated the tidal dissipation rate (with the libration-generated input included) and equated it to the outgoing energy flux due to the vapour plumes. This rendered us the mean tidal viscosity of Enceladus. The obtained value, $\eta = 0.24 \times 10^{14}$ Pa s , is very close to the viscosity of ice near the melting point.

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