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Parameterized theory of convection for medium sized icy satellites of Uranus

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Abstract

We used parameterized theory of convection driven by radiogenic and tidal heating for medium sized satellites of Uranus. The tidal heating depends on eccentricity *e* of a satellite's orbit. The theory was initially developed for satellites of Saturn and gives satisfactory description of thermal states of these satellites. In particular the theory explains Mimas-Enceladus paradox [1]. The theory successfully predicts possibility of the present endogenic activity in Dione and ruled out such activity in Tethys. However, it does not describe properly tectonic activity of Iapetus. It suggests that Iapetus interior has different rehological properties. Similar situation was found for satellites of Uranus: i.e. medium sized satellites of Saturn and Uranus cannot be described in the frame of a unique model. Therefore we suggest that satellites of Uranus have different rheological properties because of lower temperature of planetary nebula.

References

[1] Czechowski, L. (2006) *Adv. Space Res.*, 38, 788-793.