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Title: *"Titan's Synchronous Rotation"*

Abstract. The Cassini radar observation of Titan over several years show that the rotation is slightly faster than the synchronous motion (Lorenz et al. 2008; Stiles et al. 2008 and 2010; Meriggiola 2016). The seasonal variation in the mean and zonal wind speed and direction in Titan's lower troposphere causes the exchange of a substantial amount of angular momentum between the surface and the atmosphere (Tokano and Neubauer, 2005; Richard et al. 2014). The rotation variation is affected by the influence of the atmosphere when we assume that Titan is a differentiated body and the atmosphere interacts only with the outer layer.

In this work, we calculate "variations of Titan's rotation" when the body is formed by two independent rotating parts and assuming that friction occurs at the interface of them. The tides are considered using the extension of the Ferraz-Mello's creep tide theory (Ferraz-Mello, 2013 and Ferraz-Mello, 2015) to the case of one body formed by two homogeneous parts.

Joint work with S.Ferraz-Mello, Universidade de São Paulo.