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Effect of non-synchronous rotation on surface stress upon Europa: constraints on surface rheology

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In this study visco-elastic tidal deformation on Europa associated with its non-synchronous rotation is calculated. On the basis of the relationship between the geological setting, rotation period, and surface rheology, the surface viscosity is inferred to be in the range between 10^{19} and 10^{20} Pa·s. The approach presented herein raises the possibility of estimating the surface viscosity on the satellite from not only the rheological law of ice but also the tectonic setting.