

SOLAR PERTURBATIONS IN SATURNIAN SATELLITE MOTIONS AND IAPETUS-TITAN INTERACTIONS

Yoshihide Kozai
Tokyo Astronomical Observatory

ABSTRACT

Solar perturbations in Saturnian satellite motions are computed with accuracy of 10^{-5} to try to analyze observed data of orbital elements for Titan. Perturbations due to Iapetus in Titan's orbit are also developed by taking into account the motion of the orbital plane of Iapetus. Then the mass of Iapetus is determined by the motion of the orbital plane of Titan. Also oblateness parameters of Saturn and the mass of Rhea are determined by seven secular motions for six satellites. It is also found in the analysis that G. Struve's values for the semi-major axes adopted in almanacs differ from the computed values by using the new data.

The full text of this paper was submitted to the Publications of the Astronomical Society of Japan under the title "Masses of Satellites and Oblateness Parameters of Saturn."