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Title: *"The contribution of JUICE data to the determination of the Jupiter system's energy dissipation"*

Abstract. The Galilean satellites of Jupiter are some of the most fascinating celestial bodies of the Solar System, not only for their composition and internal structure, but also for their dynamics. It is well known that the three inner Galilean satellites are locked in a three-body resonance, called Laplace resonance. Moreover, the tides between Jupiter and Io dissipate a huge quantity of energy, resulting in an acceleration along the satellite's orbit. Because of the Laplace resonance, also Europa and Ganymede suffer the dissipation effects. The amount of this energy dissipation is yet a matter of discussion in the scientific community and it can result in different evolutions of the satellites' resonant state. JUICE is an ESA space mission that will perform several flybys of the Galilean moons and it will end with a nine months orbiting phase around Ganymede. The mission will provide different kinds of data (range, range-rate, vlbi and camera observations) that will allow to obtain informations about satellites' geophysical properties and to improve the knowledge of their dynamics. With ORBIT14 software, an orbit determination code developed by the Celestial Mechanics Group of the University of Pisa, we simulated these observables and we performed a least squares fit in order to solve for all the dynamical parameters we chose to determine. In particular, in this presentation, we will discuss the results we obtained for the formal uncertainties of the dissipative coefficients and possible strategies to improve them. Moreover, we will compare them with the values present in the literature.

Joint work with Andrea Milani.