JIRAM: discovering the Galilean moons.

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Introduction: The Jupiter InfraRed Auroral Mapper (JIRAM) is the imaging spectrometer on board the NASA Juno mission. Lauched in 2011, Juno arrived at Jupiter on July 4, 2016. On June 2021, during the 34th close approach to Jupiter the Extended Mission of Juno began , which will last until October 2025. In this phase, thanks to Juno's orbital evolution, the observation of Galilean moons play a foundamental role.

JIRAM, despite being designed with the main goal of studying the Jupiter's auroras and atmosphere, has proven to be a unique instrument to observe its moons already during the nominal mission [2] [3].

The high value of the data collected by JIRAM duing the moons' observations, in particular for Ganymede and Io, allowed the JIRAM' team to ask for specific tilt of Juno in some orbits, to maximize the quality of the scientific return. An example of this strategy is the Ganymede observation during orbit 24.
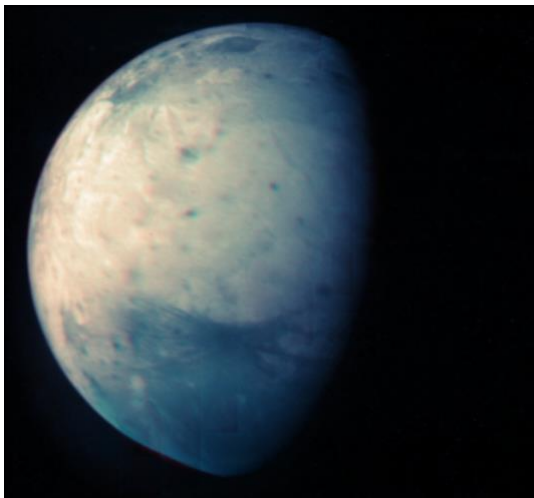

Figure 1: Ganymede observed by JIRAM during orbit 24 [4]

Methods:

In this poster we present how, exploiting its characteristics and appling a specific observation strategy, JIRAM became a key instrument in the observation, monitoring and study of the Galilean moons.

The incredible scientific results achievid by JIRAM [5] [6] and its performaces, after 7 years of activity, brought the Juno project to re-design the orbit of the extended mission, starting fome the 60th one, in order to place Io, during the closest approach, in the field of view of JIRAM every two orbits (about 60 days) for the rest of the extended mission. This new orbit's profile will allow to JIRAM to perform a deep monitoring of the Io's hot spots during the next 2 years.

References:
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[5] Zambon F., et al.(2023) *GRL, 50,1, doi: 10.1029/2022GL100597*
[6] Tosi F., et al.(2023) *Nat Astron (2023), 125,11, doi: 10.1029/2020JE006508*

Tematica:
Sviluppo di strumentazione (da spazio o da Terra) e Software.