

# HERMES satellite constellation

A new paradigm for multi-messenger astrophysics with Cubesats



**Scientific goal accurate and prompt localisation of bright hard X-ray/soft  $\gamma$ -ray transients such as  $\gamma$ -ray bursts (GRBs) – INAF**

**Fast high energy transients are among the likely electromagnetic counter parts of:**

- Gravitational wave events(GWE)
- Fast Radio Burst

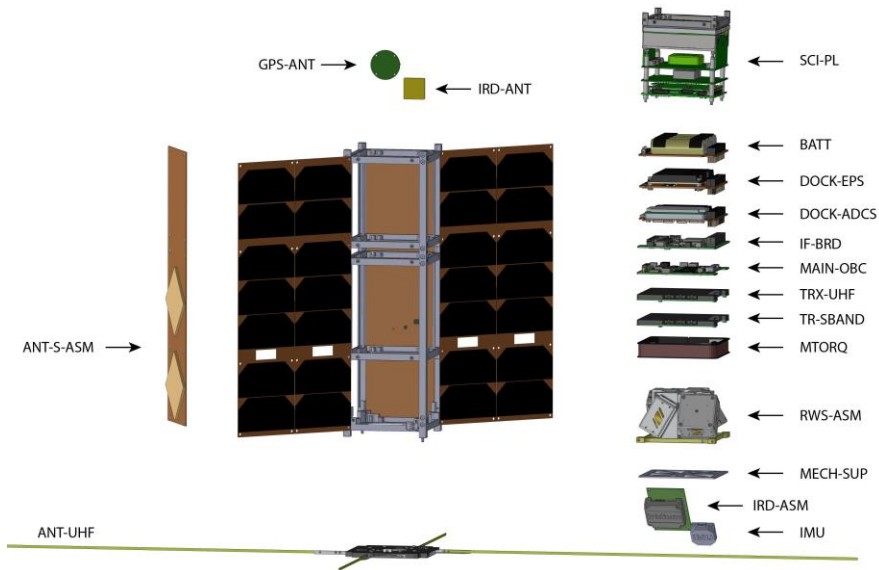
**H.E.R.M.E.S. High Energy Rapid Modular Ensemble of Satellites**  
Distributed detectors network nanosats constellation -

**Mission and technologies**

- Prime INAF (Project and Scientific Payload)  
PoliMI (Satellite bus), 16 other partners
- Constellation 52 CubeSat's (7 satellites for IOD: Hermes-TP, Hermes-SP and SPIRIT)  
Future – Moon orbit
- Launch ~2023
- Orbit LEO, ~500 km, equatorial orbit
- Platform **NANOsky I (2st generation)**  
**NANOobc, NANOcomm, NANOLink, S-Band antennas, custom IF board,...**
- Primary payload HERMES – Gamma ray burst detector (INAF)
- Status **CDR phase**

**Satellite**

- Dimensions Nanosatellite, standard 3U form factor
- Mass 6.6 kg
- Stabilisation AOCS 3-axis stabilized
- Communication VHF/UHF (GFSK) and S-band (OQPSK, 4 Mbps UL/DL)



HERMES-SP satellite with NANOsky I 2nd Gen avionics platform (photo courtesy of PoliMI)