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## The HERMES Pathfinder and SpIRIT constellation: design and development

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HERMES (*High Energy Rapid Modular Ensemble of Satellites*) Pathfinder is a space-borne mission based on a constellation of six nano-satellites flying in a low-Earth orbit (LEO). The 3U CubeSats, to be launched mid-2024, host miniaturized instruments with a hybrid Silicon Drift Detector/GAGG:Ce scintillator photodetector system, sensitive to X-rays and gamma-rays in a large energy band ( $\sim 3$  keV to  $\sim 2$  MeV).

The HERMES constellation will operate in conjunction with the *Space Industry Responsive Intelligent Thermal* (SpIRIT) 6U CubeSat, with a launch foreseen in late 2023. SpIRIT is an Australian-Italian mission for high-energy astrophysics that will carry in a Sun-synchronous orbit an actively cooled HERMES detector system payload. The projects are funded by the Italian Ministry of University and Research and by the Italian Space Agency, and by the EU Horizon 2020 Research and Innovation Program under Grant Agreement No. 821896. HERMES will probe the temporal emission of bright high-energy transients such as Gamma-Ray Bursts (GRBs), ensuring a fast transient localization in a field of view of several steradians exploiting the triangulation technique. HERMES intrinsically modular transient monitoring experiment represents a keystone capability to complement the next generation of gravitational wave experiments.

Here we will provide an outline of the HERMES and SpIRIT scientific case and payload design, integration and test, emphasizing the innovative technical solutions adopted to in the detector design, as well as an update on the current instrument performance, calibration and programmatic status.

### Eligibility for "Best presentation for young researcher" prize

No

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