



Brief Introduction about the SVOM Mission

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SVOM (Space-based multi-band astronomical Variable Objects Monitor) is a mission dedicated for studying Gamma-Ray Bursts (GRBs). The mission has been approved jointly by both Chinese and French space agencies. It is planned to be in orbit in 2021 with an altitude ≤ 600 km and an inclination $\leq 30^\circ$. The System Interface Review in Phase C was carried out by CNSA and CNES in September 2017.

The scientific objectives of the mission put a special emphasis on two categories of GRBs: very distant GRBs at $z > 5$ which constitute exceptional cosmological probes, and faint/soft nearby GRBs which allow probing the nature of the progenitors and the physics at work in the explosion. These goals have a major impact on the design of the mission: the on-board hard X-ray imager is sensitive down to 4 keV and computes on line image and rate triggers, and the follow-up telescopes on the ground are sensitive in the NIR.

In order to take advantage of the astrophysical potential of GRBs, SVOM is designed to:

- permit the detection of all known types of GRBs,
- provide fast, reliable GRB positions,
- measure the spectral shape of the GRB prompt emission from visible to MeV,
- measure the temporal properties of the GRB prompt emission from visible to MeV,
- identify quickly the afterglows of detected GRBs at both X-ray and visible bands, including the ones that are highly redshifted ($z > 5$),
- measure the spectral shape of the early and late GRB afterglow from visible to X-rays,
- measure the temporal evolution of the early and late GRB afterglow from visible to X-rays.

SVOM mission is designed to consist of a set of scientific instruments to implement the synergy between space and ground observations. The space-based instruments include:

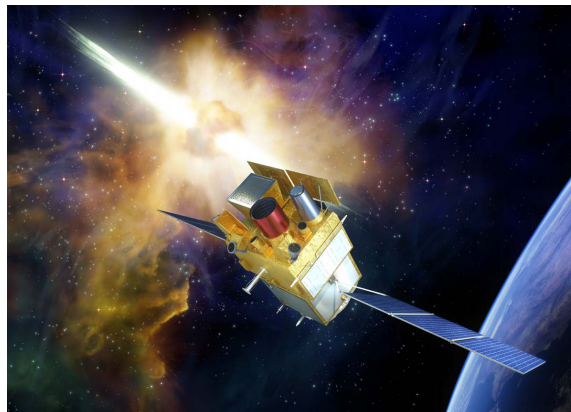
- ECLAIRS: a wide field-of-view hard X-ray imager and spectrometer.

- GRM: a wide field-of-view soft gamma-ray spectrometer.
- MXT: a narrow field-of-view low-energy X-ray telescope.
- VT: a Narrow field-of-view visible/near infrared (NIR) telescope.

And the ground-based instruments include:

- GFTs: two follow-up telescopes (one of which featuring efficient NIR capabilities).
- GWAC: an array of wide field-of-view cameras in visible band.

At the beginning of the next decade, SVOM will be the main provider of GRB positions and spectral parameters. The SVOM instrumentation, primarily designed for GRB studies, composes a unique multi-wavelength observatory with rapid slew capability and quick command up-link capability. Therefore, SVOM will also be a powerful target-of-opportunity observatory for the whole astronomy community beyond the specific objectives linked to GRBs. For example, the SVOM mission has been conceived to promptly point to the celestial fields where sources have been detected by wide field of view astronomical devices such as the upgraded generation of gravitational wave detectors (advanced Virgo/LIGO) and high-energy neutrino detectors (IceCube, KM3NeT).



Artist view of the SVOM satellite