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## Observation of ELVES from the International Space Station with the Mini-EUSO telescope

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Mini-EUSO is a telescope that observes the Earth from the International Space Station by recording ultraviolet emissions (290 ÷ 430 nm) of cosmic, atmospheric and terrestrial origin with a field of view of 44°, a spatial resolution of 6.3 km and a temporal resolution of 2.5 μs.

The instrument is based on an optical system composed of two Fresnel lenses and a focal surface composed of 36 multi-anode photomultiplier tubes, 64 channels each, for a total of 2304 channels with single photon counting sensitivity.

Mini-EUSO is a UV telescope launched in 2019 and observing the Earth from the inside the Russian Zvezda module, through a nadir-facing UV-transparent.

It is composed of a Fresnel optics (25 cm diameter, 44 deg field of view) and a Multi Anode Photomultiplier focal surface (2304 pixels, 6km on the surface) with a single-photon counting capability and a sampling rate of 400kHz.

Its scientific objectives include the search for ultra-high energy cosmic rays ( $E > 10^{21}$  eV), the study of meteors and search for interstellar objects and Strange Quark Matter, the mapping of the Earth's night-time ultraviolet emissions, the search for space debris.

The characteristics of the detector make it also well suited for the detection of TLEs, especially ELVES and the study of its development to extract spatial and temporal evolution. In this article we will focus our attention on the observation of single and multi-ringed elves.