

# Main results of the TUS experiment on board the Lomonosov satellite

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The TUS detector was the first space-based mission aimed for ultra-high-energy cosmic ray (UHECR) measurements. The detector was designed to register the fluorescent signal of extensive air showers (EAS) developing in the night atmosphere of Earth in the UV range of 300-400 nm. TUS was launched on board the Lomonosov satellite in April, 2016 and operated till December, 2017. Almost 90 thousand events were recorded during the mission, among them lightning discharges, meteors, transient luminous events, polar lights and anthropogenic signals. Some puzzling bright UV flashes in a clear sky far from possible artificial sources were also registered. Besides this, a number of EAS candidates were found in the TUS database. The majority of candidates analysed so far were recorded above populated areas near airports or similar objects, and the energy of the signals corresponds to at least 1 ZeV if they were generated by an UHECR. This does not allow us to consider these events as UHECRs. We briefly present the main results of the TUS mission and discuss its importance for the development of the future orbital missions.

## Keywords

space-based telescope, ultra-high-energy cosmic rays

## Collaboration

## other Collaboration

Lomonosov-UHECR/TLE

## Subcategory

Experimental Results

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