

## Ultraviolet Spectrograph for Exoplanet Transit Investigations (UVSETI) onboard World Space Observatory - Ultraviolet (WSO-UV)

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The Russian space telescope, World Space Observatory - Ultraviolet (WSO-UV), will be launched in 2021. WSO-UV has a primary mirror with 1.7 m diameter and several spectroscopic instruments. We are now proposing to install a spectrometer, Ultraviolet Spectrograph for Exoplanets Transit Investigation (UVSETI), to WSO-UV in a partnership with Space Research Institute of the Russian Academy of Sciences (IKI). The key science target of UVSETI is detecting biomarkers of exoplanets by transit observations of Earth-type exoplanets. If the Earth is located in a habitable zone of a M-dwarf star, we expect that optically thick oxygen exosphere is expanded up to 8 Earth-radii due to the short distance from the star and thus strong UV flux. In such case we can detect the oxygen atmosphere of an Earth-type exoplanet by UV transit observation. UVSETI consists of a input slit, a troidal grating (2400 lines/mm), and a microchannel plate (MCP) detector. The target spectral range is 120-135 nm including OI (130.5 nm) and H Ly-alpha (121.6 nm). As a baseline design, all components are qualified in several space missions (e.g., Hisaki/EXCEED, BepiColombo/PHEBUS, and CLASP). In parallel we have started new developments to increase the detection efficiency of the instrument. In this presentation we show the key sciences, the preliminary design, and the feasibility of UVSETI.

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