

Transients in Middle Earth



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Detecting and analyzing LEO satellite streaks with MUSE

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The number of low Earth orbit (LEO) satellites is increasing, and they are having a noticeable impact on the quality of a large range of astronomical data. We use archival data from the Multi Unit Spectrographic Explorer (MUSE) to quantify the effects of satellites on the datacubes. MUSE is an integral field unit (IFU) so it captures a spectrum at every pixel in the field of view. Using the *starkiller* package we have searched all MUSE quicklook images for spatially resolved satellite streaks and have extracted many satellite spectra from the impacted observations. We have detected satellites in 133 MUSE exposures from this search. We find that LEO satellite spectra are diverse and can be modeled as a solar spectrum with variable levels of atmospheric extinction. Through this process we are able to recover the science targets and build a spectral library for LEO satellites which can be used to inform other spectroscopic surveys. From matching the exposure information to archival satellite positions, we can get spectra of objects from the space race until now.

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