Contribution ID: **32** Type: **Poster presentation (90 second oral summary, 90 minute poster session & free presentation times over 3x 40m coffee breaks)**

Limiting Atmospheric Emission Lines With On-Detector Guide Windows

Tuesday, 12 March 2024 14:30 (1h 30m)

We present first results of an on-telescope demonstration of a new technique to suppress bright atmospheric OH emission lines in near-infrared spectroscopic observations. On large ground-based telescopes, near-infrared spectroscopy is often limited by these lines, which can saturate on the order of minutes. Exposures longer than this will result in the loss of any useful information at these wavelengths and also run the risk of detector effects such as bleeding and persistence. Here, we use the 1.2-m McKellar Spectrograph at the Dominion Astrophysical Observatory in Victoria, Canada, equipped with a HAWAII-2RG detector using multiple configurable, high-cadence subwindows to demonstrate on-detector suppression of these bright lines. This is achieved by resetting detector regions which contain bright emission lines before they have the chance to saturate, while the rest of the detector continues integrating. This allows for significantly increased signal to noise by reducing the read noise overhead required for stacking shorter exposures. In addition, through non-destructive reading we are able to periodically monitor the lines which are being reset, allowing us to retain information about the characteristics and variability of these lines. These features suggest great promise for the application of this method to facility-class instruments on 8-m and larger telescopes.

contribution subject matter

(Other)

Keywords for your contribution subject matter (this will assist SOC in accurately characterizing your contribution)

IR detectors, guide windows, atmospheric emission, non-destructive reading, OH lines

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