

Space Physics Fall Seminar Series

Optical Studies of the Upper Atmosphere During the 2027 Total Solar Eclipse

Airglow emissions produced by complex photochemical processes are used for ground-based studies of the upper atmosphere. They have been successfully utilized for challenging observational conditions such as dayglow and sunlit aurora.

We use a reconfigurable imaging spectrograph to address different science questions. It was used during the total solar eclipse of 2024 and simultaneously tracked atomic oxygen red (630 nm) and green (557.5 nm) lines as well as hydrogen Balmer alpha (656.3 nm) and beta (486.1 nm) features. The spectrograph was pointed away from the location of the path of totality.

To investigate further, we plan to deploy three spectrographs along the path of the 2027 total solar eclipse. Their higher resolving power will allow better sampling of eclipse dynamics, especially around the entry and exit of totality. Because the start time of totality and duration differ along the path, we should be able to observe the effects of solar forcing from multiple sites and hope to disentangle elements of the dynamical processes.



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Thursday, October 15
3:30 - 4:30 PM
CAS 502