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# A Deep Search for a Strong Diffuse Interstellar Band in the Circumgalactic Medium

*Saturday, May 17, 2025 5:00 PM (15 minutes)*

Diffuse interstellar bands (DIBs) are weak, mysterious absorption features that have been detected ubiquitously in the Milky Way and other galaxies. However, their existence outside of galaxies remains unknown. In this talk, I will present our study of searching for a DIB (DIB$\lambda$4430) outside of galaxies in the circumgalactic medium (CGM) environments. To this end, we make use of approximately 60,000 spectra of MgII absorbers, tracers of the cool CGM, from the Sloan Digital Sky Surveys, to create composite spectra with uncertainties for absorption line measurements being a few m$\mathring{A}$. I will show that even with very high quality data, there is no detectable DIB signals across the entire $E_{(B-V)}$ range traced by MgII absorption. The measurements are inconsistent with the signals detected within the Milky Way by $\sim 5\sigma$, indicating that environmental factors affect the abundance of the DIB$\lambda$4430 carrier. This research is the first probing for DIBs outside of galaxies, and sheds light on the underlying mechanisms that regulate the production and destruction of DIB carriers.

## Section

Galaxy/Extragalactic

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