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Physics and Astronomy

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Astronomy

" Interstellar Dust Extinction from the Far-Ultraviolet to the Mid- Infrared"



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2:00pm MT; PS Building, RM 234

Dust extinction measurements provide important constraints on the size, composition, shape, and abundance of dust grains and an empirical model to account of the effects of extinction on astrophysical objects. For decades our understanding of dust grains was strongly biased by measurements in our Galaxy and the ultraviolet (UV). The UV bias is due to the extensive spectroscopic observations taken with the IUE satellite revealing the details of the 2175 Å bump, far-UV rise, and underlying extinction continuum. I will discuss the results of a dedicated effort to expand our spectroscopic measurements of dust extinction to the far-UV, optical, near-infrared, and mid-infrared wavelength regimes. This work has revealed new optical extinction features, enabled the first combined study of UV and MIR extinction features, shown the possible presence of ice in the diffuse interstellar medium, and revealed an intriguing correlation between UV extinction and molecular hydrogen. Building on these works, a new $R(V)$ dependent extinction relationship at spectroscopic resolution from 912 Å to 32 microns has been determined. Moving out of our Galaxy, in progress work shows that the 2175 Å bump is rare in an expanded sample of UV extinction curves and M31 and M33 show UV extinction curves quite similar to those seen in our Galaxy. Finally, prospects for future work especially with HST and JWST will be presented.