Multi-wavelength dust extinction in the Milky Way and Local Group

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Abstract

Dust absorbs and scatters a significant fraction of stellar radiation across all wavelengths, and this effect must be accounted for when interpreting observations of any astrophysical object. Multi-wavelength extinction curves not only allow us to account for dust extinction but also provide a direct probe of dust grain properties. In this talk, I will review our current understanding of dust extinction. I will begin by explaining what extinction is, how extinction curves are measured, and what we can learn from them. I will then highlight several key extinction features across the electromagnetic spectrum and discuss how they can reveal clues about grain composition, with particular emphasis on recent results from JWST. Next, I will show how extinction curves vary across the Milky Way, largely as a function of the total-to-selective extinction ratio, *R(V)*. I will also demonstrate how new measurements in Local Group galaxies are expanding our understanding of dust extinction beyond the Milky Way. Finally, I will conclude with a brief outlook on the future of extinction studies.

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