Contribution ID: **83** Type: **Poster**

UV Dust Extinction and Attenuation Curves in the Local Volume

Monday 11 June 2018 17:10 (1 minute)

Our knowledge of the shape of the ultraviolet (UV) extinction curve informs our understanding of topics from the composition of dust grains in the ISM to how we interpret the shape of galaxy SEDs. I will discuss two complementary approaches to measuring the extinction curve.

First, we use resolved stellar populations in the Large Magellanic Cloud to determine the extinction curve shape along lines of sight to over 600,000 stars. The METAL (Metal Evolution, Transport, and Abundance in the LMC) program has obtained 33 fields of HST WFC3 imaging in seven NUV to NIR filters. For each of the stars in these fields, we use the BEAST (Bayesian Extinction And Stellar Tool) to model their SEDs and infer their stellar (age, mass, metallicity) and dust (A_V, R_V, 2175A bump) parameters. We derive high-resolution extinction maps by combining the measurements of many stars in each pixel on the sky, which we can then relate to the properties of the local ISM.

Second, we measure the shape of the attenuation curve for unresolved stellar populations in entire galaxies. The Ultraviolet/Optical Telescope (UVOT) on the Swift satellite has nearly completed a survey of 450 galaxies in the Local Volume. The three broadband NUV filters on UVOT are situated such that they can constrain both R_V and the 2175A bump. We use this unique capability in combination with archival optical and NIR imaging to model the SEDs of each galaxy and derive representative attenuation curves. For three galaxies (M31, M33, SMC), we have additionally created the first maps of the attenuation curve. We then examine variations of the attenuation curve with local (e.g., star formation rate, PAHs, dust temperature) and global (e.g., metallicity) galactic environment.

Together, these two methods will provide comprehensive constraints on the nature and properties of dust and how they vary within and between galaxies.

Consider for a poster?

Yes

Primary author: Dr HAGEN, Lea (STScI)

Co-authors: Dr ROMAN-DUVAL, Julia (Space Telescope Science Institute); Dr GORDON, Karl (Space Telescope Science Institute); Dr WILLIAMS, Ben (Univ of Washington); Dr GRONWALL, Caryl (Penn State); SEBZDA, Steven (Penn State); Dr SIEGEL, Michael (Penn State)

Presenter: Dr HAGEN, Lea (STScI)

Session Classification: Poster Presentations

Track Classification: Dust as a tool