Contribution ID: **5** Type: **Oral Presentation**

Dust extinction inference from Random Forest regression of insterstellar spectral line widths

Monday, 30 May 2022 11:00 (20 minutes)

Dust extinction is ubiquitous in the Universe and a challenge in the correction of the brightness and color in astronomical observations. Spectral absorption lines from abundant gas atoms in the interstellar medium (ISM) like sodium, potassium and calcium, or molecules like diffuse interstellar bands, among others, serve as dust indicators and have been used to estimate dust extinction. However, several caveats and limitations exist like line saturation at high optical depths.
We explore here new automated avenues to infer dust extinction from spectral lines with a large sample of supernova spectra. We first develop an automated techinque to measure equivalent widths with high accuracy when compared to high-resolution spectra and simulated spectra. Secondly, with the Milky Way extinction values of Schlafly & Finkbeiner (2011), we train machine learning techniques like random forest regression that use all available lines as input features finding much better predictions of dust extinction than traditional methods based on trends from measurements of single species.

Presenter: GONZALEZ-GAITAN, Santiago (CENTRA, IST, University of Lisbon)

Session Classification: Supervised Learning