



Contribution ID: 81

Type: **Contributed talk**

The dust-to-stellar mass ratio, a key-tool for probing galaxy evolution from $z \sim 0$ up to $z \sim 6$

Friday, 15 June 2018 14:35 (25 minutes)

Over the last decade, the IR Herschel satellite has allowed to trace the dust budget up to $z \sim 4$, and the recent ALMA facility is extending the measurement of the dust production to even early times. This has rendered particularly urgent the issue of explaining how the dust mass in galaxies is related to other key galaxy-integrated quantities, i.e. stellar mass and star-formation rate.

In the present work, I will focus, in detail, on the dust-to-stellar mass (DTS) ratio, as this quantity represents a true measure of how much dust per unit stellar mass survives the various destruction processes, i.e. astration and interstellar shocks.

The observed values of the DTS from $z \sim 0$ up to $z \sim 6$ will be compared to theoretical estimates computed by means of state-of-the-art chemical evolution models for galaxies of different morphological type, showing the strong dependence of this quantity on two key ingredients, i.e. the underlying star formation history and the stellar initial mass function.

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Session Classification: Dust in the early universe

Track Classification: Dust as a tool