UV dust attenuation as a function of stellar mass and its evolution with redshift

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Abstract

Studying the ultraviolet dust attenuation, as well as its relation to other galaxy parameters such as the stellar mass, plays an important role in multiwavelength research. This work relates the dust attenuation to the stellar mass of star-forming galaxies, and its evolution with redshift. A sample of galaxies with an estimate of the dust attenuation computed from the infrared excess was used. The dust attenuation versus stellar mass data, separated in redshift bins, was modelled by a single parameter linear function, assuming a non-zero constant apparent dust attenuation for low-mass galaxies. But the origin of this effect is still to be determined and several possibilities are explored (actual high dust content, variation of the dust-to-metal ratio, variation of the stars–dust geometry). The best-fitting parameter of this model is then used to study the redshift evolution of the cosmic dust attenuation and is found to be in agreement with results from the literature. This work also gives evidence to a redshift evolution of the dust attenuation–stellar mass relationship, as is suggested by recent works in the highest redshift range.