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Decoding the IRX-β dust attenuation relation in star-forming galaxies at intermediate redshift

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Dust is an important driver of the evolution of the interstellar medium (ISM) and of galaxies as a whole. Dust attenuates the stellar light and transforms it into infrared emission. In this work, we investigate what drives dust attenuation in star-forming galaxies at intermediate redshift. We use robust [Oii], [Oiii], and Hβ line detections of our statistical sample of 1049 galaxies to estimate the gas-phase metallicities. We derive key physical properties that are necessary to study galaxy evolution such as the stellar masses and the star formation rates using the spectral energy distribution. We find a strong dependence of the attenuation on gas-phase metallicity, and also strong correlation with galaxy compactness characterized by the Sérsic indexes. A less strong correlation is seen with stellar masses, specific star formation rates and the stellar ages of our sources. Metallicity is one of the drivers of the dust attenuation scatter. We find that more compact galaxies witness a larger amount of attenuation than less compact galaxies. Galaxy environments do not significantly affect dust attenuation in our sample of star forming galaxies at intermediate redshift. This study needs to be followed by the larger redshift coverage of LOFAR, to study the attenuated and unattenuated star formation from the local Universe to high redshifts.