

## DUSTiny: dust influence on galaxy properties in new generation surveys

The star formation history of galaxies is characterised by the current rate of formation of young stars and the mass of already mature individuals. The complex interaction between adult and newborn stars and the dust intrinsic to star formation makes measuring and modelling these fundamental galaxy quantities (e.g., stellar mass, star formation rate, dust mass) a surprisingly challenging task. Star-forming galaxies are filled with clouds of dust that obscure young stars and the structures they form. The dust absorbs some of the light emitted by the young stars and re-emits this light in the infrared range. The exact course of this process depends on the properties of the dust and its geometry in the galaxy. Therefore, powerful ground- and space-based telescopes observe various galaxy types at different electromagnetic wavelengths to understand the effect of the dust and, thus, the 'life processes' of galaxies.

However, there are galaxies that we are not able to observe even in our Local Universe, and, therefore, we cannot study their star formation history. These galaxies are very diffuse and usually much larger than the well-known galaxies we observe in the beautiful images from the Hubble Telescope or the new James Webb Space Telescope. In addition, their low amount of less stellar light in the optical wavelength range makes it very difficult for current telescopes to detect them. These galaxies are called low surface brightness galaxies. They are a highly mysterious population of galaxies, as we have only accurately observed a few of them so far. Fortunately, soon, thanks to new observational projects and very high-tech astronomical instruments, we will be able to observe our Universe much more deeply and accurately, and these mysterious objects will no longer be so rare. In particular, we expect to track them in huge numbers in the planned 10-year Legacy Survey of Space and Time (LSST) scheduled for the Vera C. Rubin Observatory. The first light from this instrument is expected as early as 2025.

The main goal of the DUSTiny project is to analyse dust attenuation in both bright and low surface brightness galaxies. By participating in the LSST project, we will have access to optical observations of millions of galaxies in function of their shapes (morphology). We are already preparing for our task by studying the properties of galaxies in a deep but tiny field located in the NEP's northern part of the ecliptic. As a result, our project will answer the question of whether the relative mass of galactic dust varies with galactic surface brightness and whether galaxies below the brightness level of previous observations require special treatment due to the different dynamics of dust-star interactions than in bright objects.