JWST probes the role of stellar mass and morphology in obscuring galaxies

In the last years a new population of galaxies missed in optical surveys but bright at far-infrared/millimeter wavelengths has been discovered. These optically dark galaxies are of great interest as they are seen as a key population of galaxies that dominate the contribution of massive (Mstar > 10^10.3 Msun) galaxies to the star formation rate density of the universe at z > 3. However, their high-redshift, massive nature, and the reason behind their elusiveness are still uncertain. I will review this subject and present a JWST-based study investigating the drivers of dust attenuation in massive galaxies in the JWST era, focusing on understanding what is the nature of these optically dark galaxies that resulted in missing them in the pre-JWST observations. The results show their high-redshift and massive nature. Stellar mass appears as a primary driver of dust attenuation, which naturally results in missing massive galaxies in shallower optical surveys. Morphology plays a secondary role in obscuring galaxies, with evidence for more compact stellar profiles resulting in higher dust attenuation. Optically dark galaxies are dark because their dust content is associated to more compact stellar profiles, when compared to similarly massive star-forming galaxies at the same epoch.