

# Bars: An interplay between gravity and baryons

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Dynamical cold discs in the local group are observed to host galactic bars. As we go to higher redshifts, strong gas turbulence along with several other factors inhibit or delay bar formation. Simulations have shown that galaxies at redshifts  $z \geq 1.5$  do not host bars, but recent observations from JWST show the existence of bars in galaxies at  $z \geq 3$ . The existence of bars at high redshifts certainly hints at a complex interplay between baryons and gravity than thought previously. In this contribution, we present results of simulations of isolated galaxies, similar in properties with the ones at high redshift. The galaxy templates are setup in Modified Newtonian Dynamics (MOND) framework, and their equivalent counterparts in  $\Lambda$ CDM framework, i.e. with a dark matter halo. We explore different gas fractions in the both templates, advance these templates using Phantom of Ramses (POR) software. We look at the different properties of the bar and try to understand the role of gravity as well as the role of gas in the formation and evolution (destruction) of the bar.