

X07a GALAXY CRUISE: classifying HSC-like mock galaxies from the TNG50

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GALAXY CRUISE is a Citizen Astronomy project led by the National Astronomical Observatory of Japan using deep optical imaging from the Hyper-Suprime Cam (HSC) Subaru Strategic Program. After a brief training course, participants (“crews”) are invited to visually classify the morphologies of bright galaxies in the nearby Universe (i.e., $z \lesssim 0.2$). Equipped with the deep images produced by the 8-meter-class Subaru telescope, crews can capture even the faintest stellar structures, including the tidal signatures of galaxy interactions and past mergers. To better understand the role of interactions in galaxy evolution, the sensitivity of these signatures to key characteristics of interactions must be established – including the merger mass ratios and the time relative to coalescence. However, measuring accurate merger mass ratios and post-coalescence timescales for observed galaxies is not tractable a posteriori. In contrast, cosmological hydrodynamical simulations have the advantage of a priori knowledge of individual galaxy merger histories, including these key quantities. Therefore, we launched a campaign to classify mock HSC images of galaxies from the high-resolution TNG50 cosmological simulation on the GALAXY CRUISE platform. On our September 2023 to March 2024 sailing, we collected $\sim 270\text{K}$ classifications for more than 5000 mock images of TNG50 galaxies at $z = 0.1$. This talk will discuss the results of our initial analysis and its implications for GALAXY CRUISE classifications of “real” galaxies.