
New Ramses simulation projects at Yonsei

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Abstract

We introduce two new simulation projects using Ramses_yOMP. The first is NewHorizon2 (NH2). It is a cousin to NewHorizon (NH) in the sense that it uses virtually the same initial condition. NH2 has several improvements over NH: (1) it uses a modified prescription on stellar feedback aiming to improve the M^* -Mhalo relation, (2) it uses a new prescription on the BH settling hoping to better describe the BH motion near the galactic centre and to achieve a better BH-to- M^* ratio, (3) it uses 9 chemical elements (H, D, He, C, N, O, Mg, Fe) that allow the study of chemical evolution, and (4) it uses an improved description of gas tracer particles. NH2 has the final/best resolution of 70 pc, twice as large as that of NH, and so serves as a resolution test as well. NH2 is running on Nurion through $a=0.65$ as of 31 Aug and is expected to reach $a=1$ in Jan/Feb 2022. The second is YZiCS2, a high-resolution simulation for a typical galaxy cluster halo ($7e14$ Msun) based on the same physical ingredients as NH2. This will be a new version of YZiCS but with substantially better resolutions, allowing lots of topical studies such as jellyfish galaxies and ultra-diffuse dwarf galaxies. YZiCS2 started on Nurion and currently runs on Curie, and will eventually be completed on Nurion in 2022.

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