

Abstract Submitted
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MWEST: Cosmological Zoom-in Simulation Suite of Milky Way-like Dark Matter Halos with Large Magellanic Cloud and Gaia-Enceladus Analogs¹ DEVESHI BUCH, Stanford University, ETHAN NADLER, Carnegie/USC, RISA WECHSLER, Stanford/KIPAC/SLAC, YAO-YUAN MAO, Rutgers University — The growth of galaxies is closely connected to the dark matter halos—gravitationally bound regions of dark matter—that surround them. Cosmological simulations of halos with characteristics similar to the halo of our own galaxy, the Milky Way (MW), provide valuable insights into our home in the Universe. Observations suggest that the most massive galaxies that currently orbit or previously merged with the MW, the Large Magellanic Cloud (LMC) and Gaia-Enceladus (GE) respectively, have a significant impact on the formation of the MW; including these in simulations can contribute to a more realistic picture of MW evolution and dynamics. Thus, we present MWEST: a unique high-resolution zoom-in simulation suite of 25 MW-like systems, each selected with LMC and GE analogs in its formation history. We find that systems matching these specific MW-like criteria are rare, constituting only $\sim 1\%$ of all systems in the relevant mass range. This simulation suite will be useful for a range of applications in understanding our galaxy and placing it in a cosmological context, from analyzing dark matter structure to uncovering the building blocks of the MW.

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