

Abstract Submitted
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ChaNGa N-body code and the AGORA CosmoRun paper¹ J.W. POWELL, Reed College, THOMAS QUINN, University of Washington, SANTI ROCA-FABREGA, Departamento de Física de la Tierra y Astrofísica, Facultad de Ciencias Físicas, Plaza Ciencias, 1, 28040 Madrid Spain, HECTOR VELAZQUEZ, Instituto de Astronomía, Universidad Nacional Autónoma de México, A.P. 70-264,04510, Mexico D.F., Mexico, AGORA PROJECT TEAM — AGORA is an acronym for Assembling Galaxies of Resolved Anatomy, and this project [J. Kim, et al. *ApJ Supp.*, **210**, 14 (2014)] is approximately twelve years old and continuing strong. The CosmoRun paper is the third in this series and is a comparative set of zoom-in cosmological simulations of five codes using the same initial conditions (described in the poster): two smooth particle hydrodynamics (SPH) codes and three adaptive mesh refinement (AMR) codes. The paper demonstrates that under the four calibrations – described briefly below – diverse computational approaches to this type of simulation can roughly converge. ChaNGa is not one of the codes in the paper despite many simulations and intense effort. The four calibrations increase in complexity of the simulations and at each step all five codes come to a convergence due to frequent zoom-like meetings. The first calibration does not use any cooling. The second calibration turns on cooling using the program GRACKLE [B.D. Smith, et al. *MNRAS* **466**, 2217 (2017)]. The third calibration turns on star formation. Finally, the fourth calibration turns on feedback. The selected results of each calibration will be presented.

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John Powell
Reed College

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