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3D Shapes of Galaxy Clusters in Illustris-TNG Simulations ROSANA LENHART, Boise State University, HEIDI WU COLLABORATION, ALESSIA MOLINO COLLABORATION — Galaxy clusters are the largest structure in the universe, and the 3D shape and orientation of these galaxy clusters impacts the gravitational lensing signal which can be used to study the formation of structure in the Universe. However, the 3D shape has primarily been studied in dark matter-only simulations—without taking into account the impact of the gas and stars. IllustrisTNG is a public project containing 18 hydrodynamic simulations of large sections of the universe. We determine the 3D shape of the clusters contained in the simulations. This work compares how the shape is affected by the presence of gas and stars, the resolution of the simulation, and the specified radius measurement. We find that gas tends to make clusters more spherical, while higher resolution tends to make clusters more elliptical. In addition, by using different radii for measuring the shape we found clusters are more spherical at larger radii.

Rosana Lenhart Boise State University

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