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CROWDSOURCED MORPHOLOGICAL CLASSIFICATIONS OF ILLUSTRIS SYNTHETIC GALAXY IMAGES

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ABSTRACT

Abstract.
Keywords: keywords

1. SCIENCE CASE

Crowdsourced classifications of Illustris synthetic images (Snyder et al. 2015; Torrey et al. 2015) using the Galaxy Zoo (Lintott et al. 2008; Willett et al. 2013) interface.

2. DATA

As of 15 Feb 2016, there have been 17,046 images classified in GZ-Illustris.

The total Illustris sample has 110,256 images. That's from 6,891 unique galaxies using a mass-limited sample from the $z = 0$ slice in the Illustris-1 simulation (Vogelsberger et al. 2014). Each galaxy has 16 corresponding composite images — 1 galaxy $\times$ 4 camera angles $\times$ 4 randomly-selected backgrounds. The total set of images is split into three groups:

- fixed_mass (10,832 galaxies) - I selected two narrow mass ranges (low and high) and then selected images with all camera angles and backgrounds within it. This is for analyzing the effect of viewing angle and background on morphological accuracy.
- fixed_view (6,214 galaxies) - these span the full mass range of the sample, but with only 1 camera angle and background per galaxy. This is for doing an initial survey of the morphological distributions. The reason that this isn't 6,891 is because several hundred of the images were already classified in fixed_mass.
- full_sample (93,210 galaxies) - all the rest.

Both the fixed_view and fixed_mass samples have just been completed at 40 classifications each. Illustris is now paused, so the full_sample doesn't have any classifications yet.

3. ANALYSIS

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