“Observations” of Simulated Dwarf Galaxies

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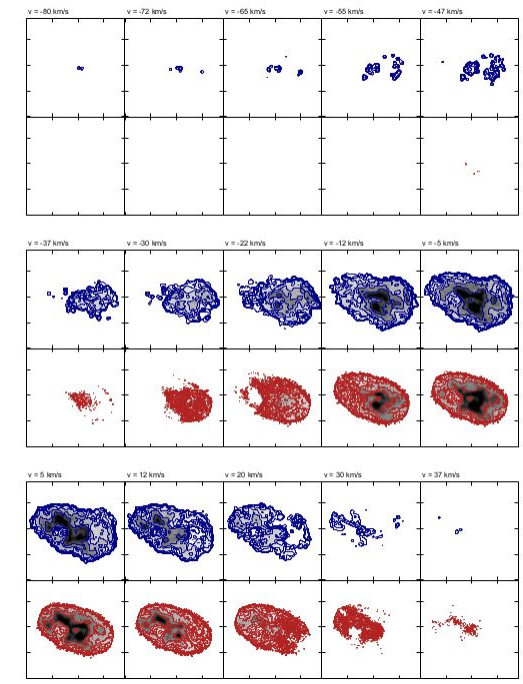
Abstract

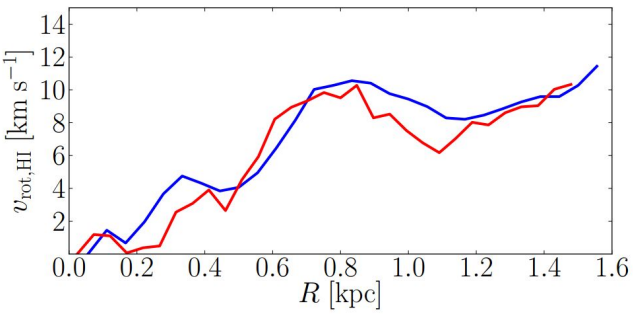
The Lambda-CDM cosmological model for structure growth faces major problems when compared with data from dwarf galaxies. One notable example of these is the Too-Big-To-Fail (TBTF) problem, both for Local Group and field dwarfs. Presented here are our recent efforts to overcome these issues by bringing dwarf galaxy simulations as close as possible to the observations, by applying the same techniques and computer codes that observers use, to observe simulated dwarf galaxies.

Kinematic analysis of simulated dwarfs using 3DBarolo



The kinematic analysis of the synthetic radio data cubes using 3DBarolo yielded channel maps, which revealed that the software reproduces the most salient features of the input data cubes.

Similarity between the rotation curves derived from 3DBarolo and GIPSY was further reassuring about the meaningfulness of our analysis.



Furthermore, synthetic color-magnitude diagrams of simulated galaxies were constructed and analysed using the techniques developed by the LCID-team, and their star-formation histories derived (Shivangee et al., in prep.).

Overall, we discuss how these observed quantities compare with their theoretical counterparts, computed directly from the simulations, and how this pertains to some of Lambda-CDM's apparent problems.

References

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