

Research Project Proposal: Galaxy-Halo Connection

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Chosen Research Project Topic: Galaxy-Halo Connection (Project 6)

We have learned about the dark matter webs that connect galaxies, and I am amazed and excited to learn more about them. In particular, I am interested in how the galaxy's angular momentum and its associated dark matter halo interact, both before and after mergers. How does the "dark web" change over time, and will it change the way we look at mergers?

Specific Research Questions

- How does the net angular momentum vector of the merged remnant halo compare to that of the stellar remnant? Is it aligned? How does this evolve?
- How does the alignment of the angular momentum depend on radius?
- Is the dark matter halo prograde or retrograde relative to the disk? Does this depend on radius?
- What fraction of the angular momentum is in the disk and halo prior to and post merger?
- Is the net angular momentum (disk + halo) conserved prior to and post merger?
- Does the merged remnant follow the Stellar Mass-Halo Mass relation?