Dependence of Sagittarius stream properties on dark matter model

Connor Hainje
Advisor: Mariangela Lisanti

Abstract

The Sagittarius (Sgr) tidal stream is a large structure of stellar debris from the Sagittarius dwarf galaxy which has been torn away by the Galactic tidal forces of Milky Way (MW). This stream wraps at least once around the Milky Way, placing many Sgr stars in the MW halo. The kinematics by which the Sgr stream has evolved depend both on stellar properties of the MW and Sgr galaxies, but also on their dark matter halos. We aim to determine how the evolution of the Sgr streams depends on the dark matter model used to characterize the Sgr and MW halos. To do so, we use N-body simulation methods to simulate the entire infall of Sgr, modeling the dark matter halos using both cold and self-interacting dark matter models. We compare the resulting predicted tidal streams to determine the relationship between dark matter models and the tidal stream structure. Finally, we compare these results to Sgr stream data.

Outline