

Title: Statistically probing the merger history of the Milky Way

Abstract: In this talk I will discuss how semi-analytic models of Galaxy formation, coupled to cosmological N -body simulations, could allow us to constrain the Milky Way merger history. Statistical model emulators are used to efficiently explore the multi-dimensional input parameter space of our model. We search for the sets of input parameters that can best reproduce the cumulative Luminosity Function of satellite galaxies. For all the dark matter only simulations considered, running our semi-analytic model with best-fitting parameters produced luminosity functions that tightly fit their observed counterpart. However, we find that the best-fitting input parameters selection strongly depends on the underlying merger history of the mock Milky Way-like galaxy. The resulting best-fitting models are compared against independent sets of observational data. Interestingly, we find that only one of these models was able to simultaneously reproduce the observed stellar halo mass within 40 kpc of the Galactic center. On the basis of this analysis it is possible to disregard certain models, and their corresponding merger histories, as good representations of the underlying merger history of the Milky Way.