A generative finite mixture model

- in order to recover the formation history of the halo
- we propose a generative model in the form of a finite mixture model
- where each observed point comes from one of m mixture components (the case of m=4 is pictured on the left)
- since each mixture component has an associated mass and accretion time range, the formation history is specified if we know what percentage of observations come from each mixture component
- our goal, then, is to determine the mixing proportions, π
- the observed points we are attempting to fit are based on some subset of the 1,500 satellites from simulations, whereas the mixture components are based on all 1,500 satellites
- our generative model is designed to be generic enough to fit specific halos using a more general set of templates.