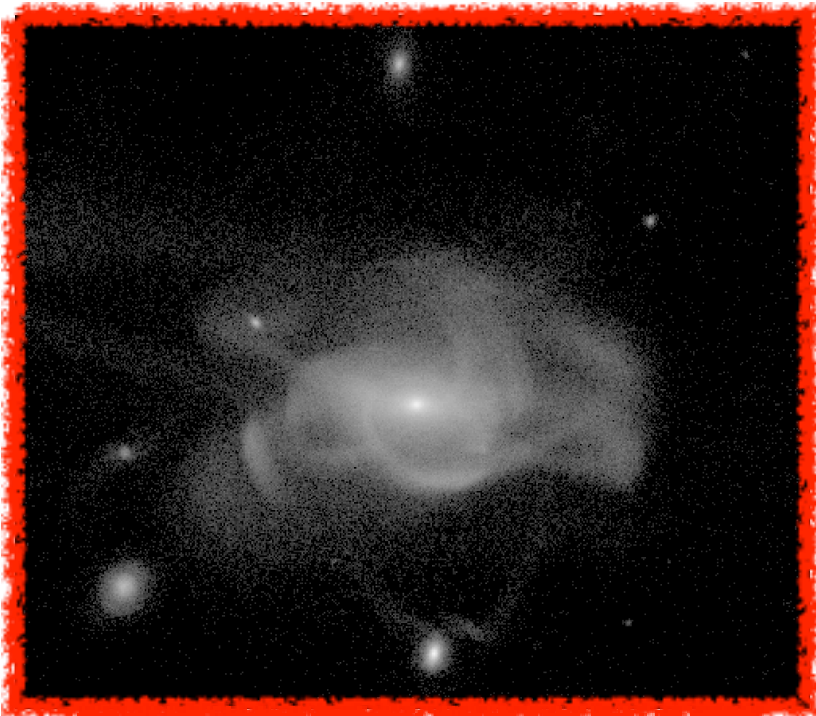**Galaxy Simulation**
`Universe,`
`Galaxia_ananke.Input`
(cosmology, DM model, gravity, gas physics, star formation, stellar feedback, ...)


One data entry =
One star particle =
many "stars"
...with same age,
chemical elements

Stellar Populations
`Galaxia_ananke.Survey`
`(C++ galaxia_ananke)`
(stellar structure, stellar evolution, convection models, isochrone mapping, IMF, ...)

Phase-space density estimation
`DensitiesDriver ← EnBiD-ananke`
`(C++ EnBiD)`
(kernel dimension, smoothing scales, ages, accretion history, ...)

Mock Catalog
`Galaxia_ananke.Output`
One data entry =
One synthetic star with synthetic astrometry and photometry

50 kpc
Synthetic Stars
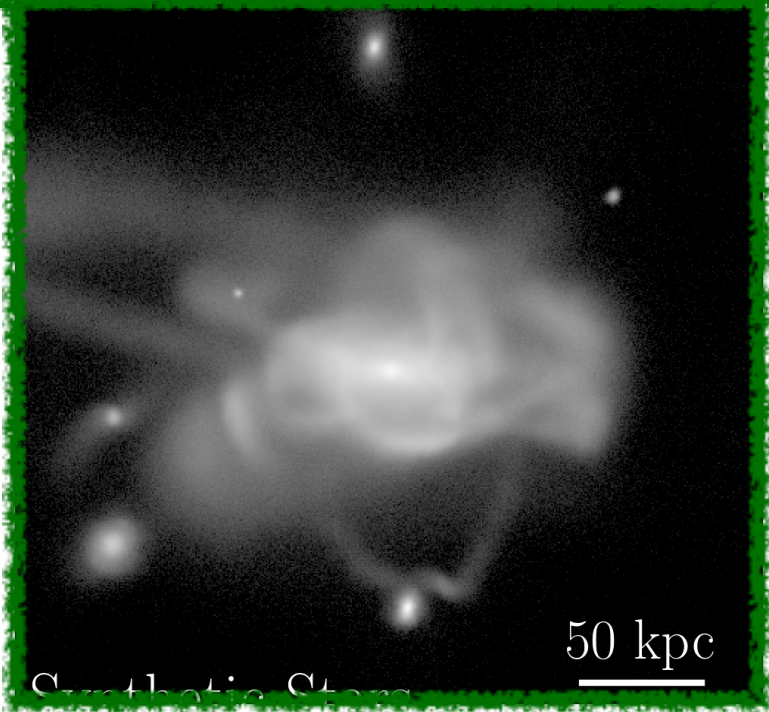
Survey description
`Observer`
Magnitude/color limits, sky footprint of survey

Instrument model
`ErrorModelDriver`
error models for observed quantities as function of magnitude, color, etc

Dust model
`ExtinctionDriver`
extinction reddening of starlight in observed wavelength ranges

Synthetic Survey
`Galaxia_ananke.Output`
One data entry =
One "observed" star with realistic astrometry and photometry and associated uncertainties