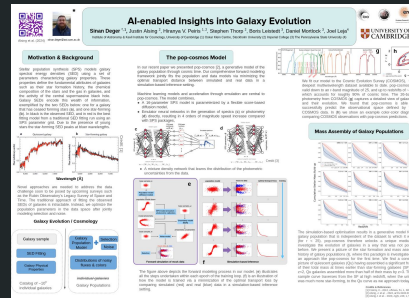




Alsing et al. (2024)
arXiv:2402.00935



Poster Session B - May 1st



AI-enabled Insights into Galaxy Evolution with pop-cosmos

Sinan Deger

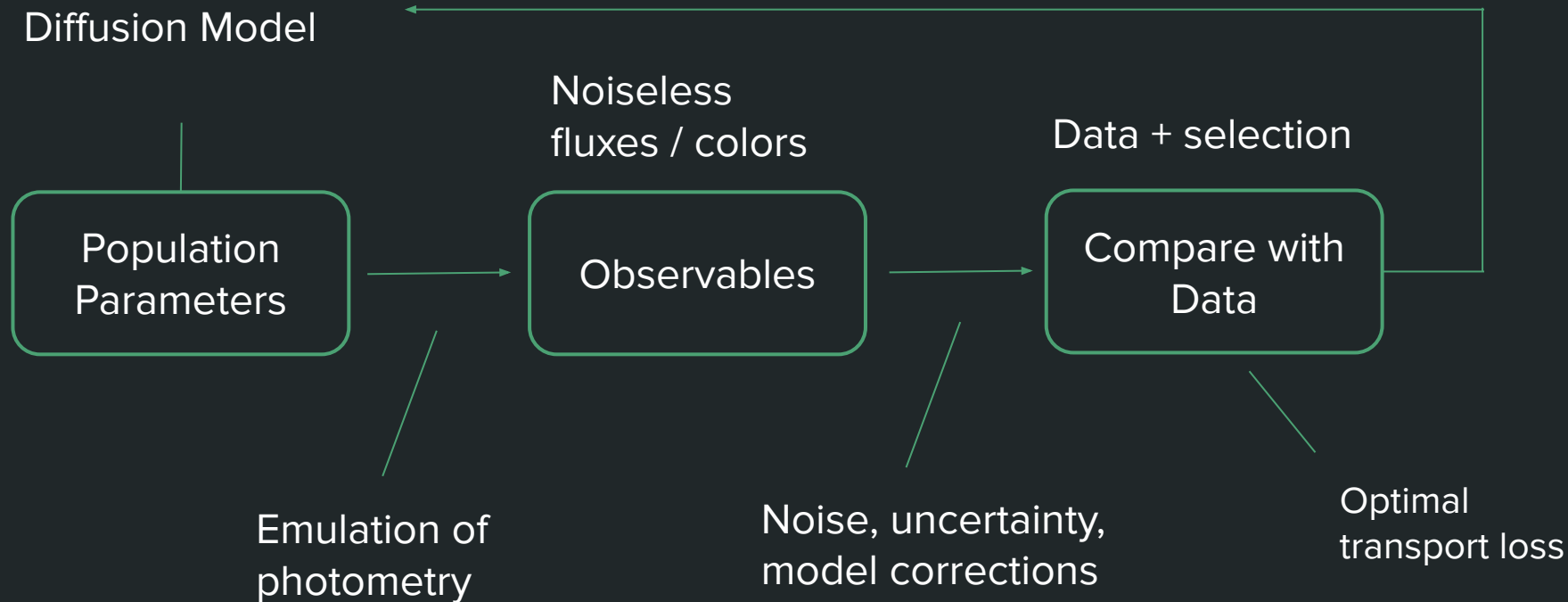
*Institute of Astronomy & Kavli Institute for Cosmology
University of Cambridge*

With Justin Alsing, Hironya Peiris, Stephen Thorp^{*}, Boris Leistedt,
Daniel Mortlock, and Joel Leja

^{*}At EuCAIFCon24

The pop-cosmos Framework - An Overview

Diffusion Model

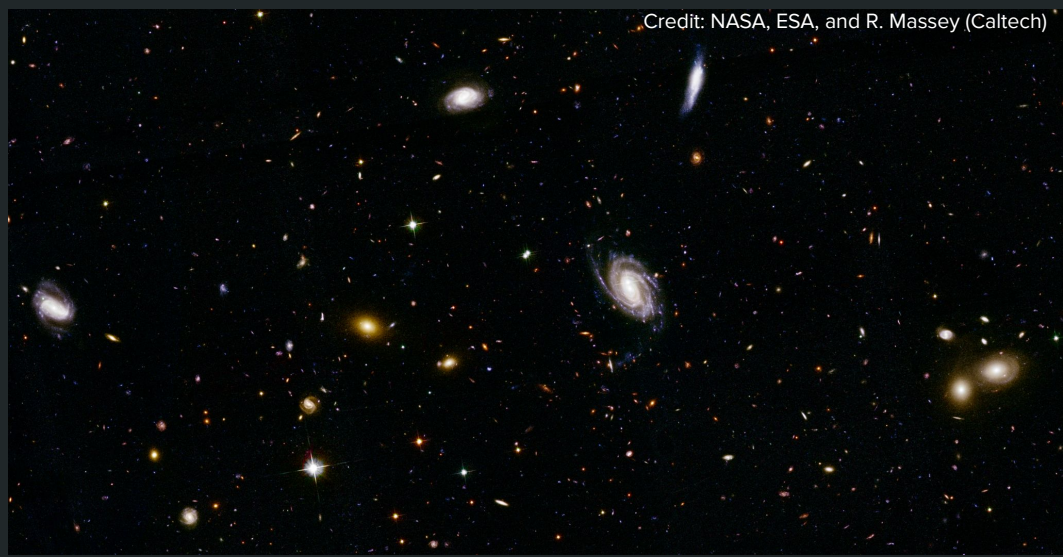


We directly optimize population parameters on the data space by minimizing the optimal transport loss

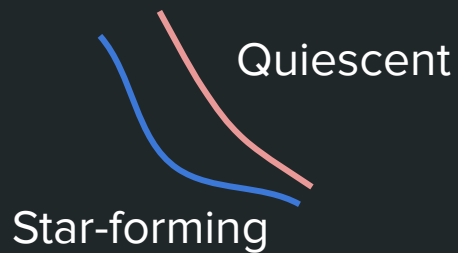
Training loop for pop-cosmos

Fitting pop-cosmos to Observations

We fit pop-cosmos to COSMOS20 (Weaver+22), a deep galaxy survey with observations from the ultraviolet to the infrared.



The simulation-based optimization approach in pop-cosmos results in a generative model representative of general galaxy populations



Our AI-enabled model
unlocks a unique way to
investigate the evolution of
galaxy populations across
90% of cosmic time ($z < 4$).

Cumulative Stellar Mass Build-up

