



Siddhant Mishra-Sharma (MIT/AI FI) Summer School



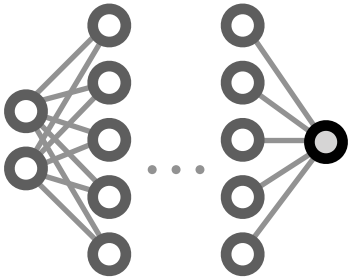
170

6

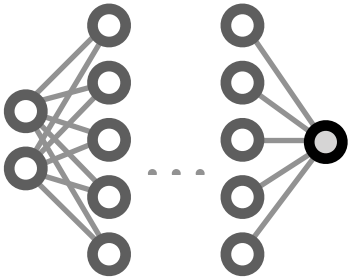
7

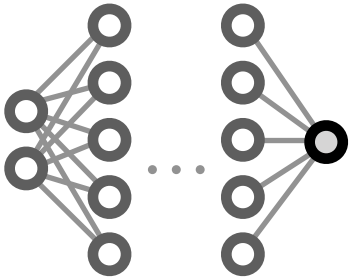
[Nguyen, SM et al 2022]

Extracting the dark matter distribution

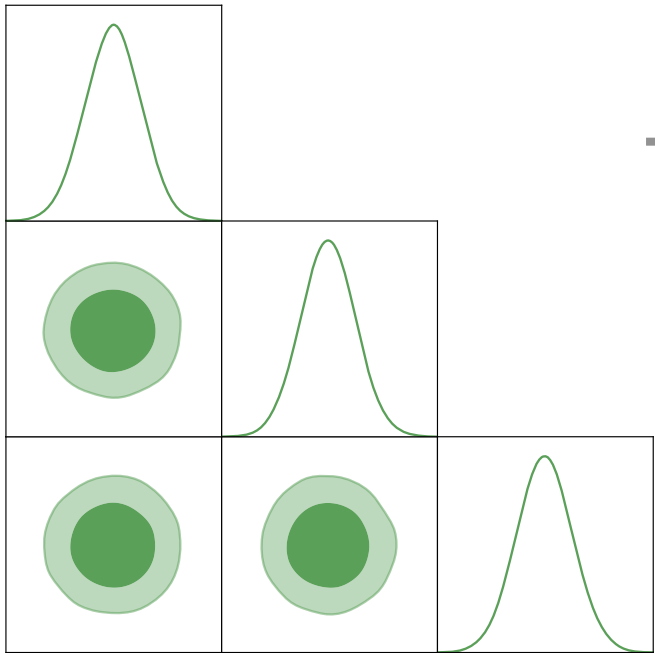








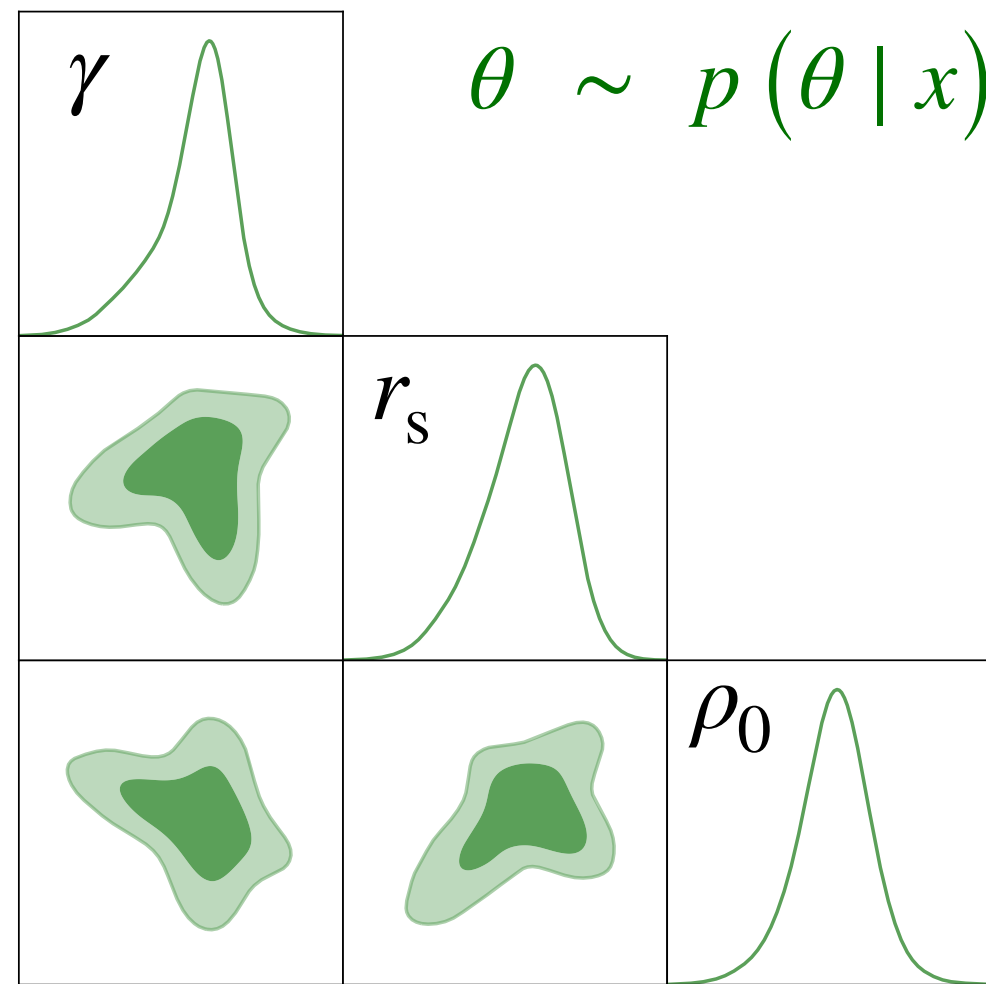
Base distribution  $\mathcal{N}(u)$

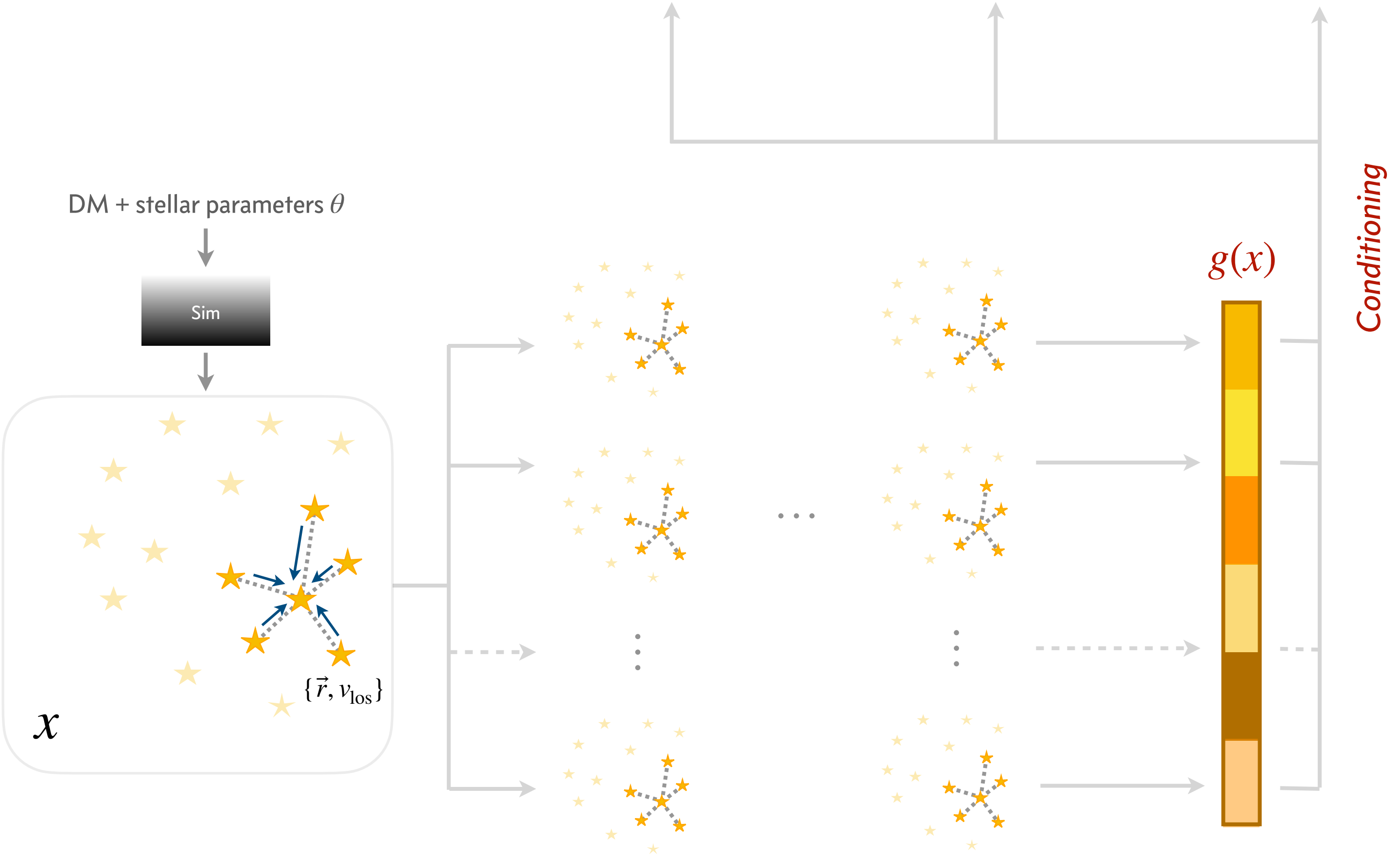


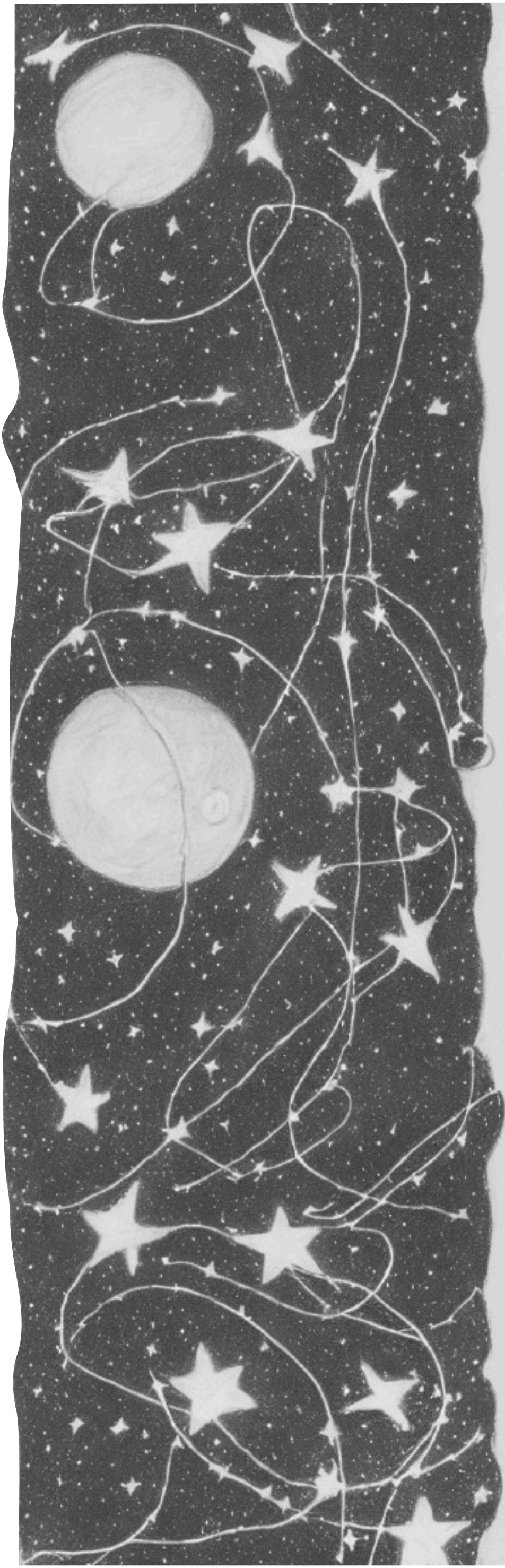
Conditional flow transformation  $\theta = f(u)$

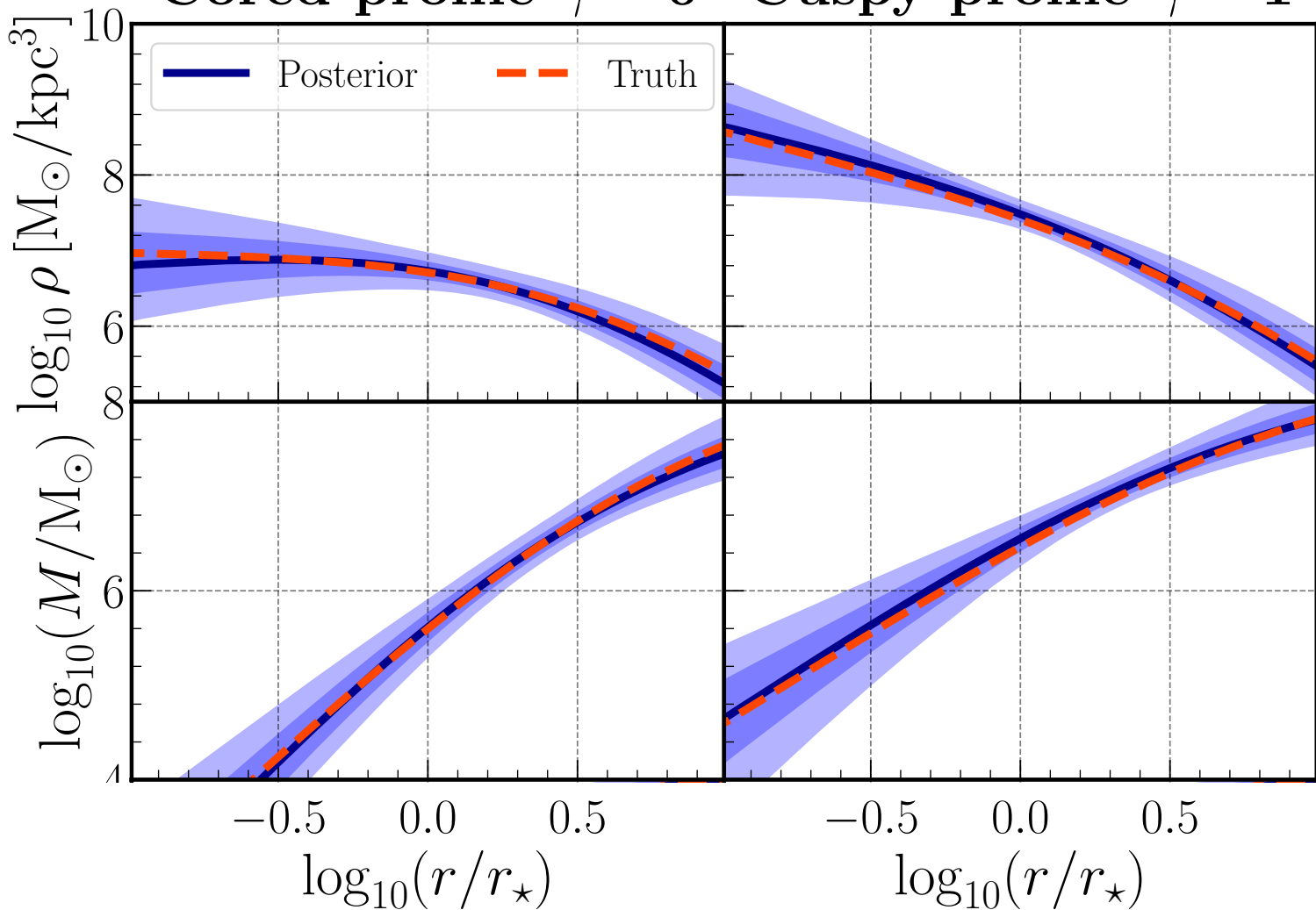


Posterior distribution  $p(\theta | x)$

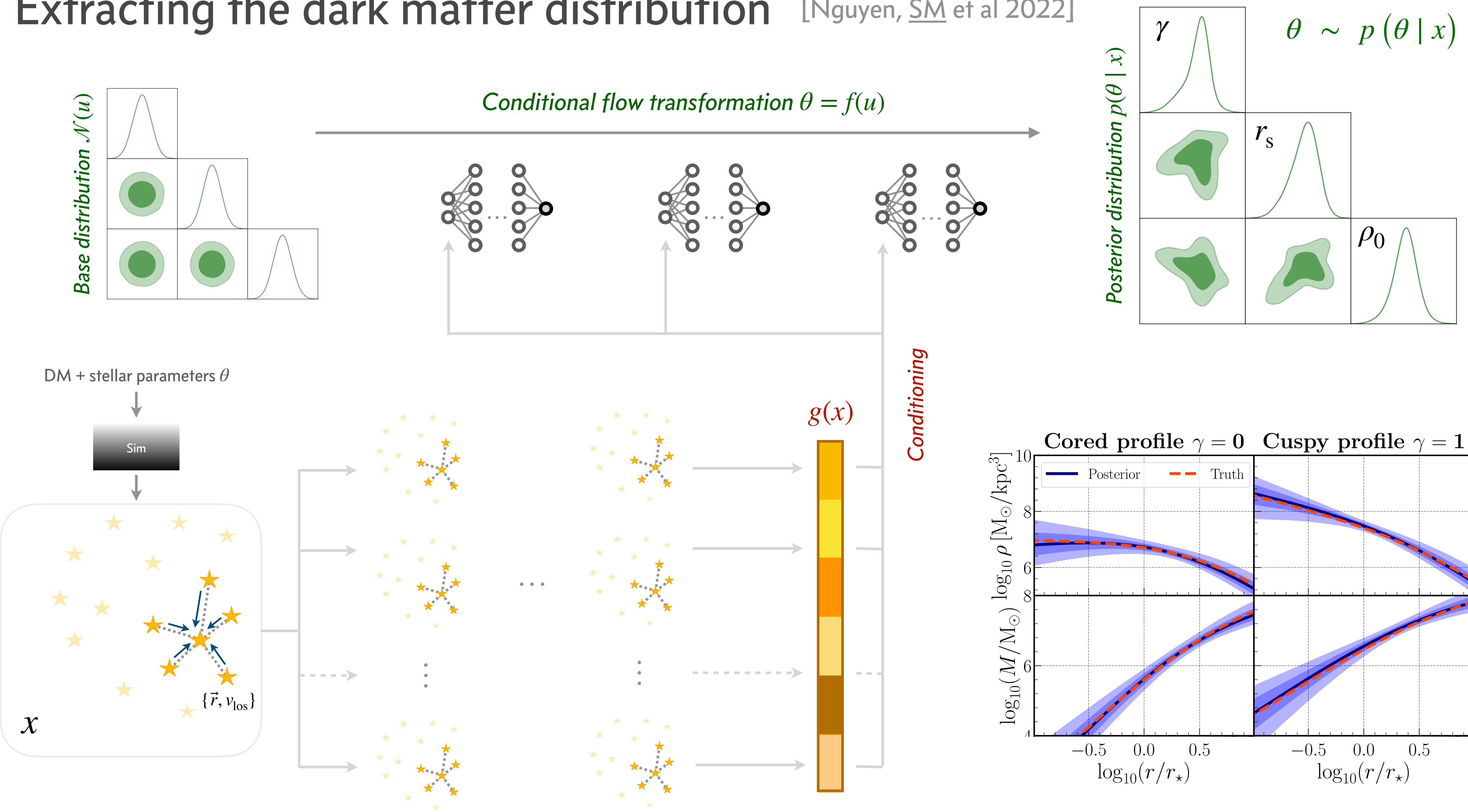






Cored profile  $\gamma = 0$ Cuspy profile  $\gamma = 1$ 

# Extracting the dark matter distribution [Nguyen, SM et al 2022]





# Back to diffusion: the *probability flow ODE*

For any diffusion process, there exists a corresponding deterministic process whose trajectories share the same marginal probability densities  $p(x_t)$  as the SDE [Song et al 2021]

