

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

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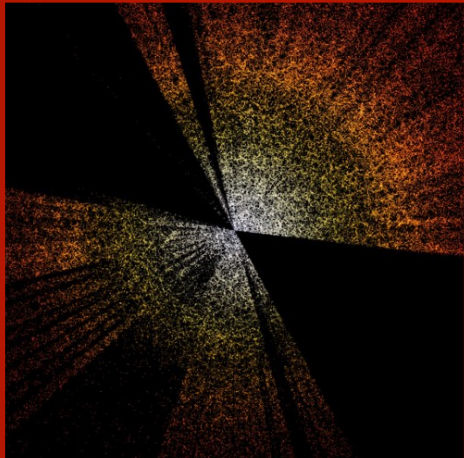
4

9

Emulation and inference

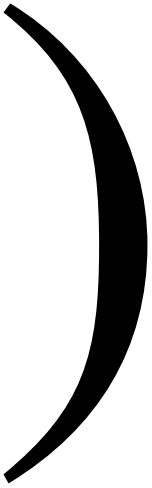
*Emulation/
sampling*





$\sim p()$



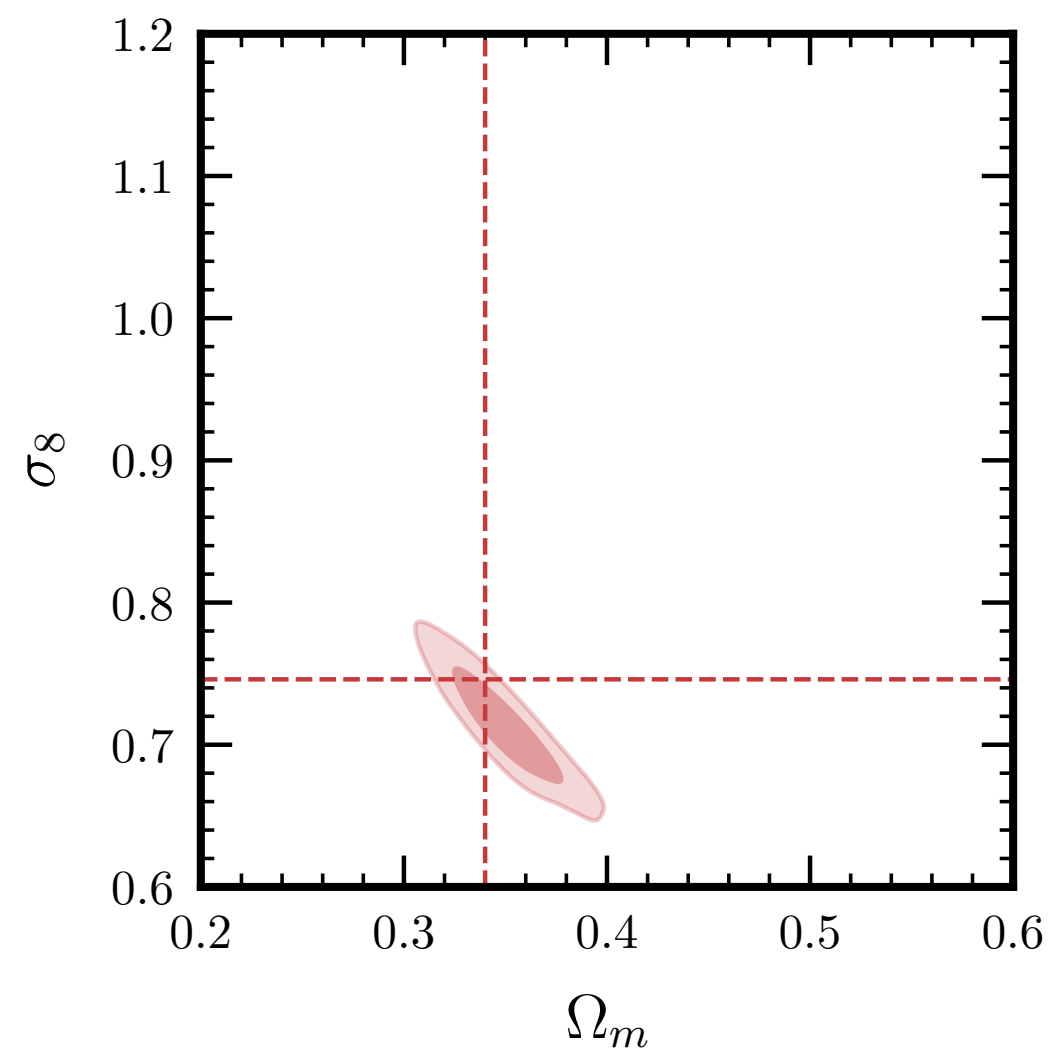


Cosmology

Galaxy-halo



$$p\left(\begin{array}{c} \text{Cosmology} \\ \Omega_m, \sigma_8 \end{array} \middle| \begin{array}{c} \text{Data} \end{array}\right)$$

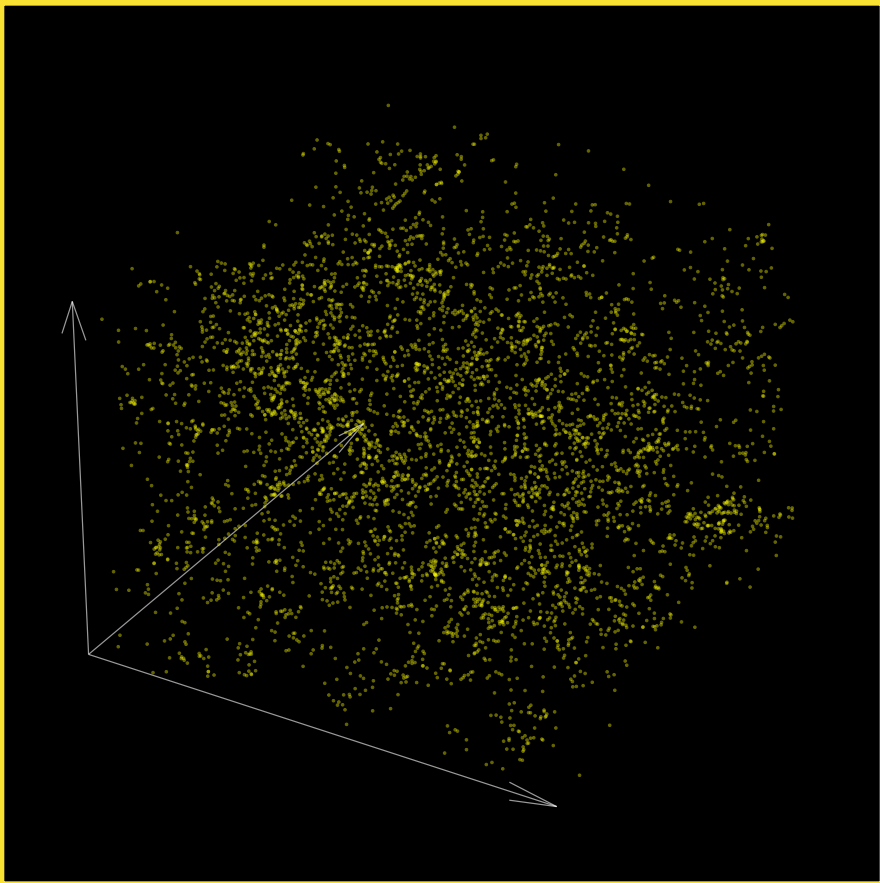


*Parameter
estimation*

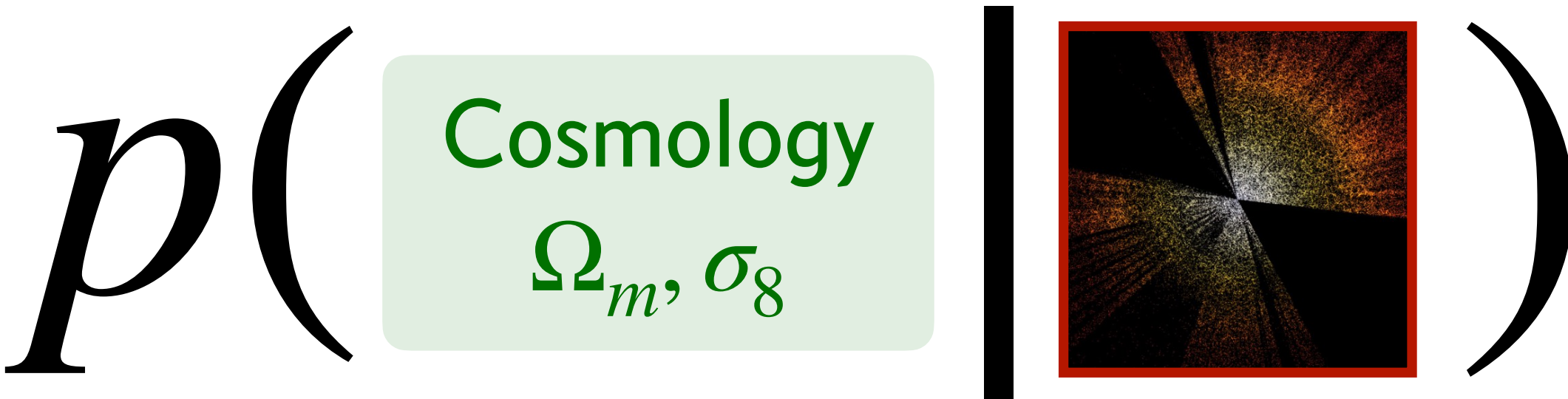
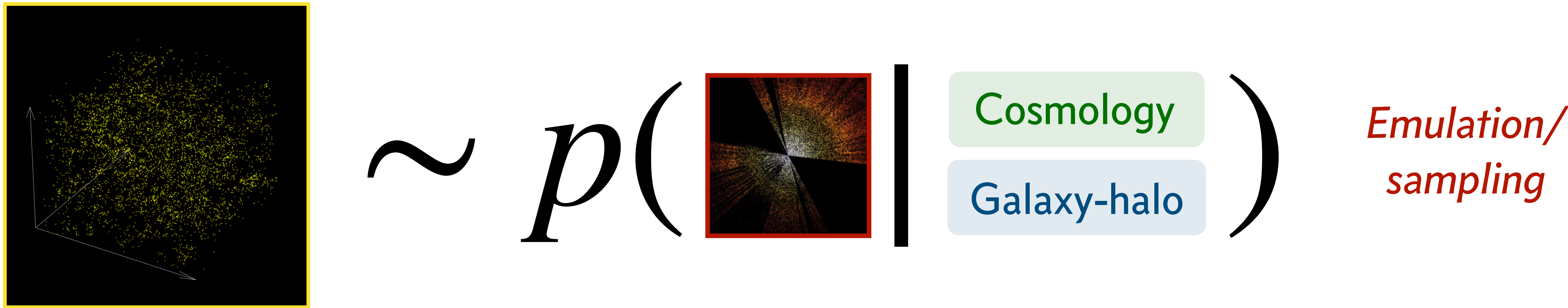
$$\nabla_{\{\Omega_m, \sigma_8\}} \mathcal{P}$$

Differentiable likelihood

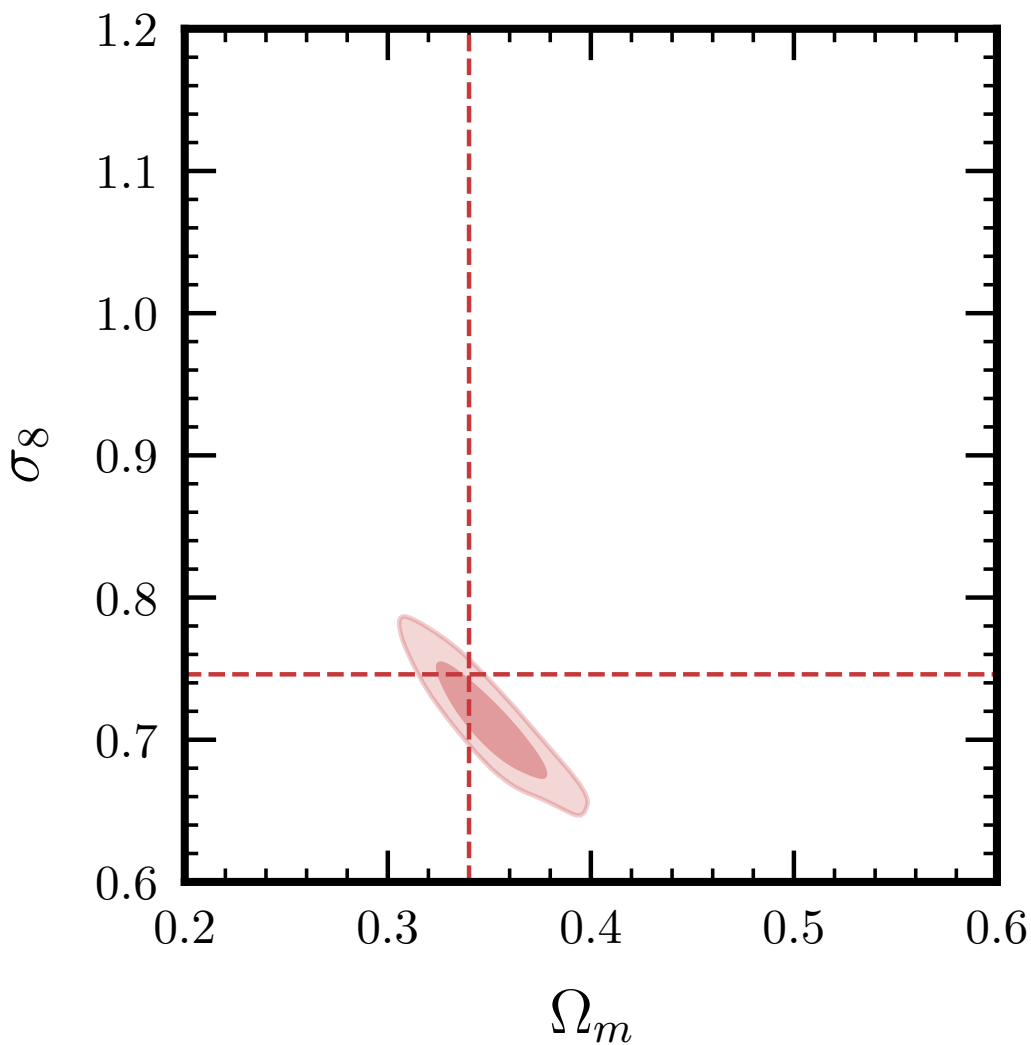
→ even better!



Emulation and inference



$\nabla_{\{\Omega_m, \sigma_8\}} p$ Differentiable likelihood
→ even better!



Parameter estimation

The diffusion score model

Want a score model that

- Operates on *sets* of varying cardinality
- Is permutation equivariant
- Efficiently captures correlation structure of point cloud

