



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



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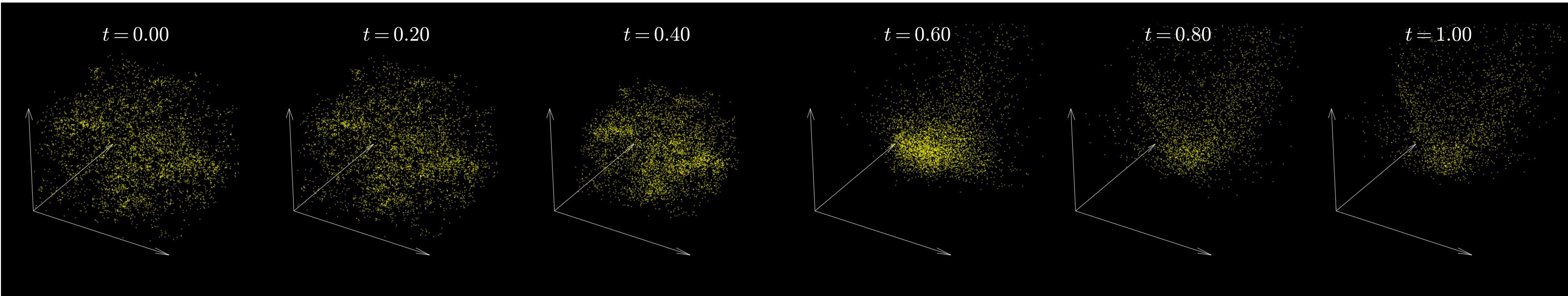


*Graph neural network-guided diffusion on galaxy*

Samples from *Quijote* [Villacusa-Navarro et al, 2021].



Forward process (*adding noise*)



Reverse process (*denoising*)



Cosmology parameters  $\{\Omega_m, \sigma_8, \dots\}$   
+ Galaxy-halo parameters

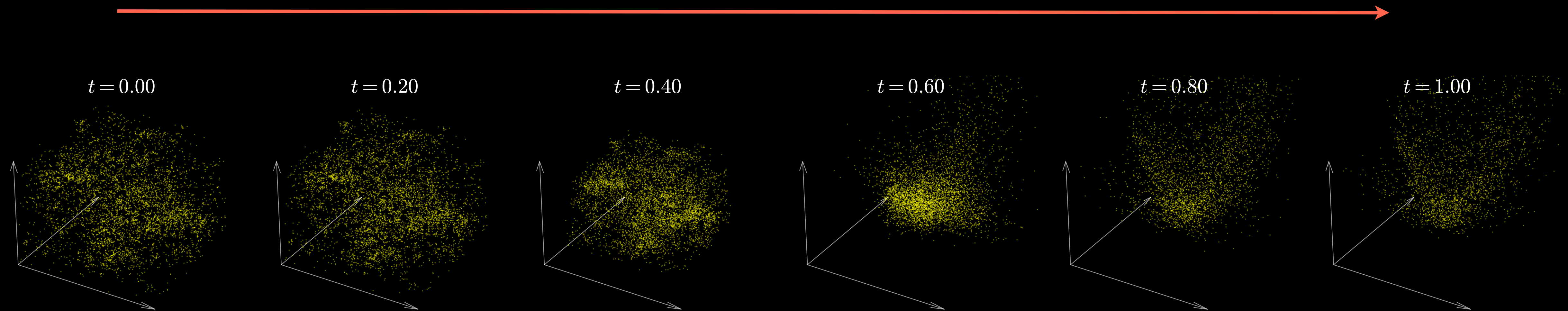
SM, Cuesta-Lazaro [in prep]

# Graph neural network-guided diffusion on galaxies

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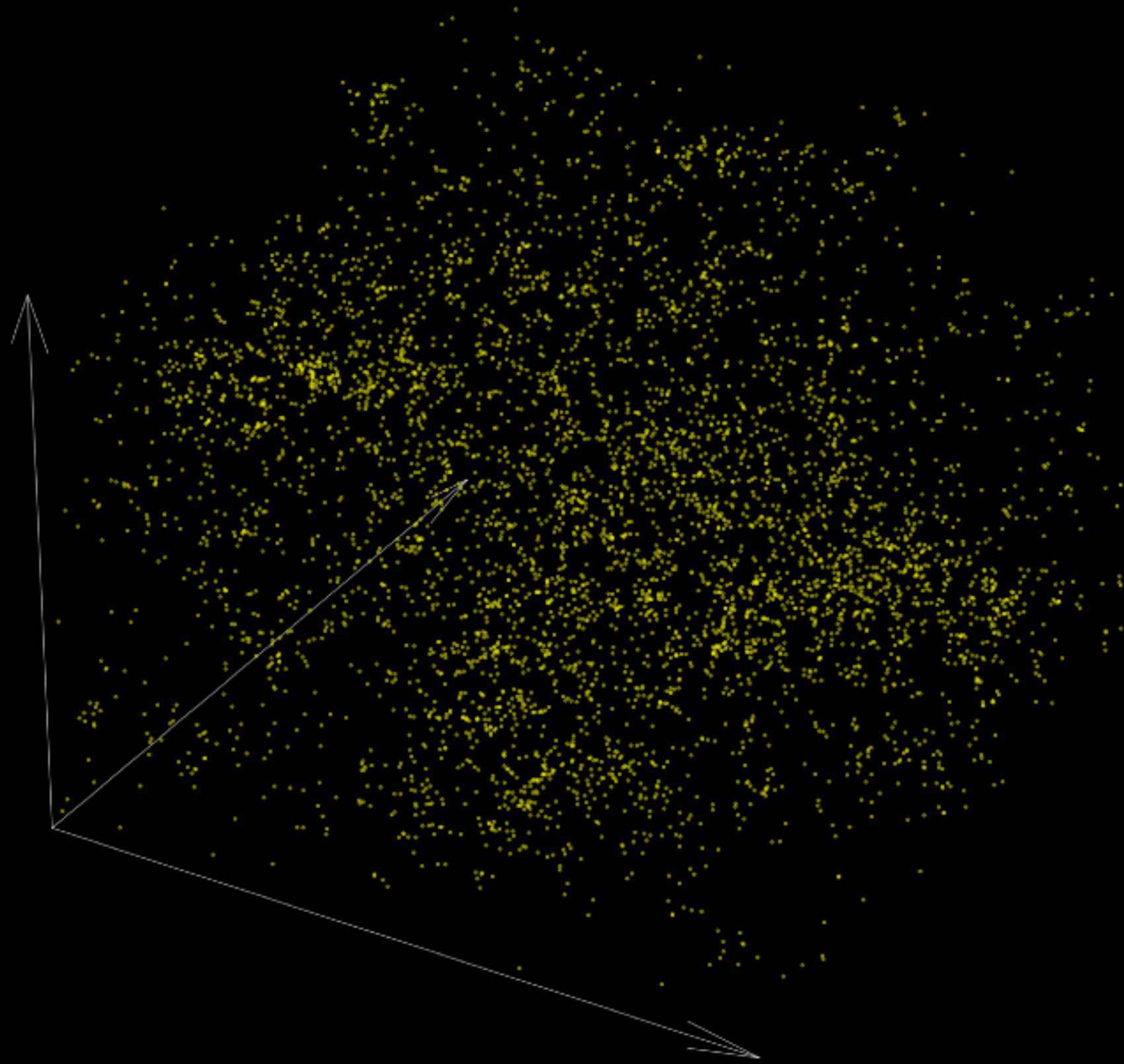
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# Diffusion on galaxies

SM, Cuesta-Lazaro [in prep]

Diffusion process

$t = 0.00$



Conditional generation  $x \sim p(x \mid \Omega_m, \sigma_8)$

$\Omega_m = 0.10, \sigma_8 = 0.60$

