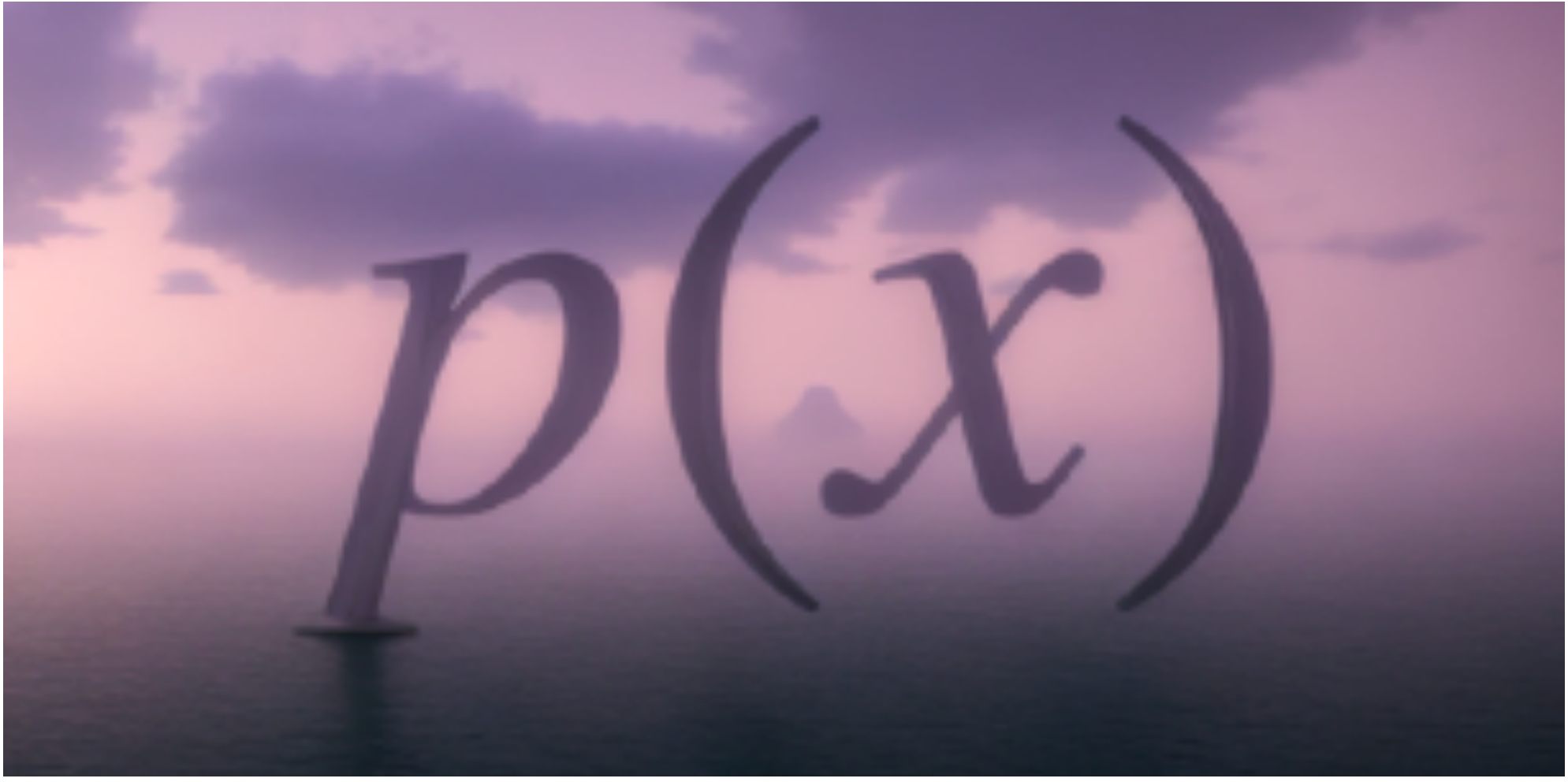
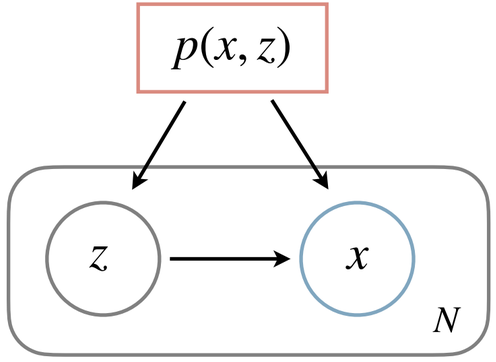
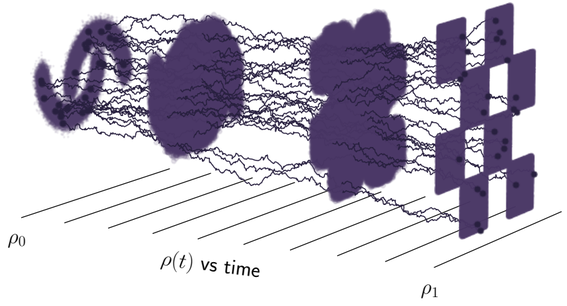
Outline


$p(x)$



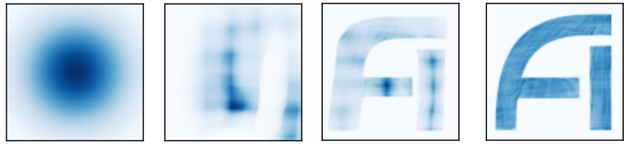
Variational auto encoders

Latent-variable modeling, and compression is all you need



Diffusion models

Models based on iterative refinement



Normalizing flows

Invertible transformations

Why (deep) generative modeling?

What is it, and what can it do for you?

Outline

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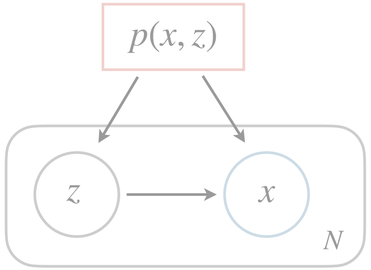

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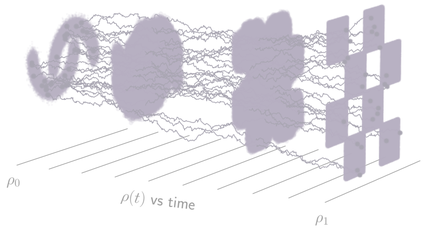

Diffusion models

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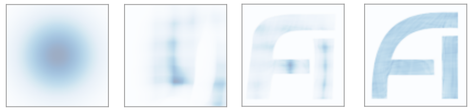


Normalizing flows

Invertible transformations

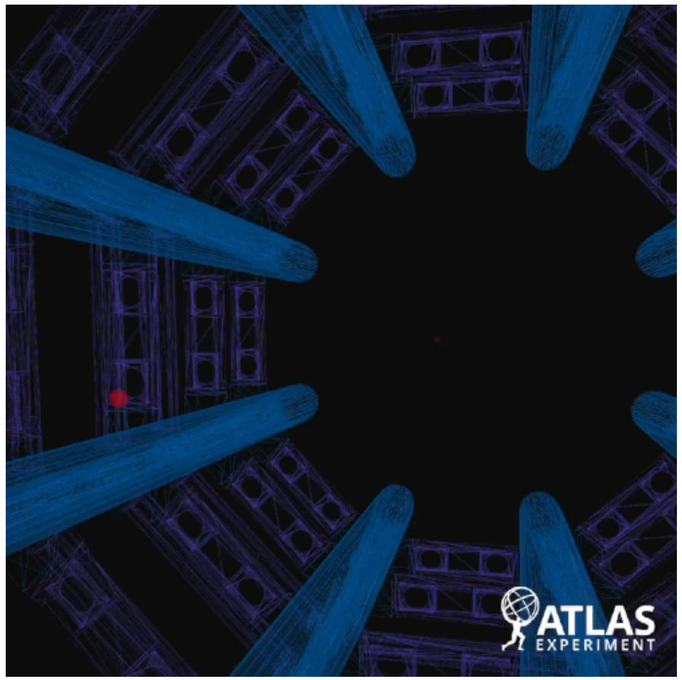
Simulators

$$x \sim p(x)$$

Simulators are ubiquitous: *they prescribe a way to sample from the data distribution*

Collider data

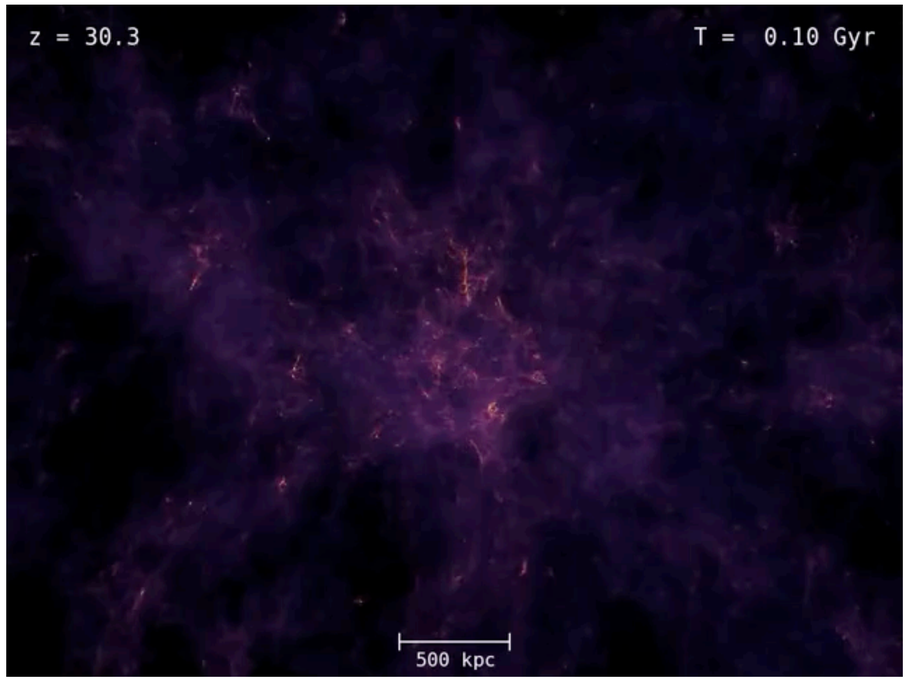
particles $\sim p$(particles)



[C. Cesarotti with ATLAS]

Cosmology data

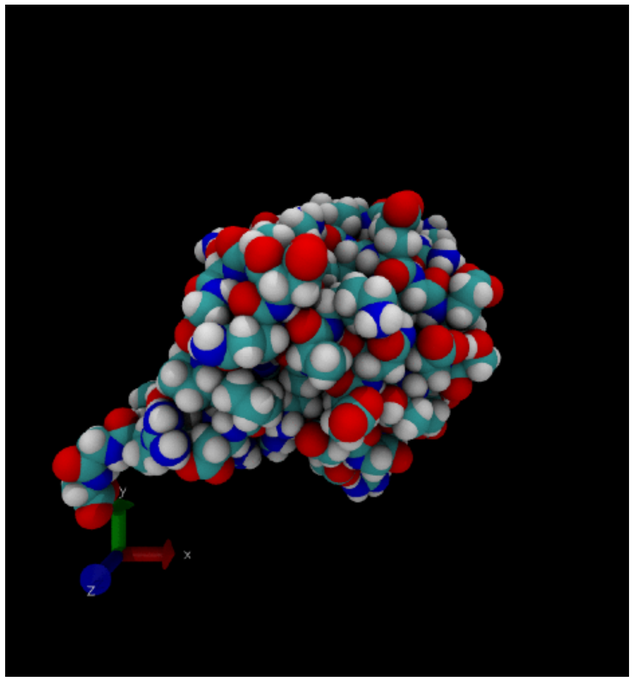
particles $\sim p$(particles)



[Aquarius simulation]

Molecular dynamics

configurations $\sim p$(configurations)



[E. Cances et al]