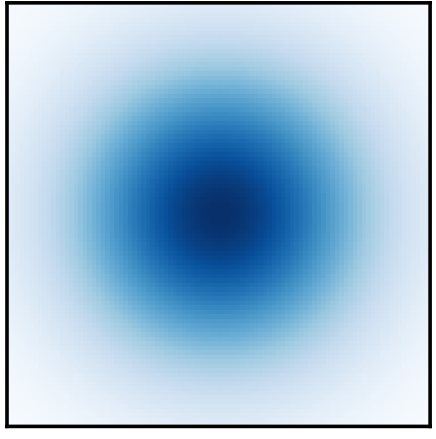
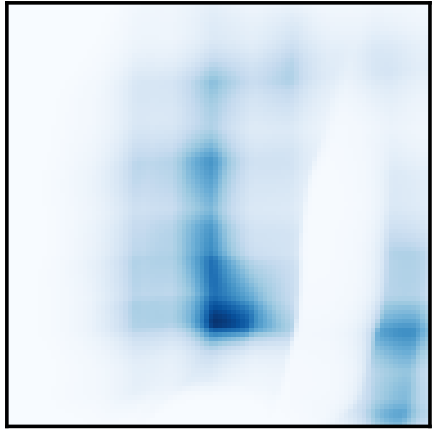
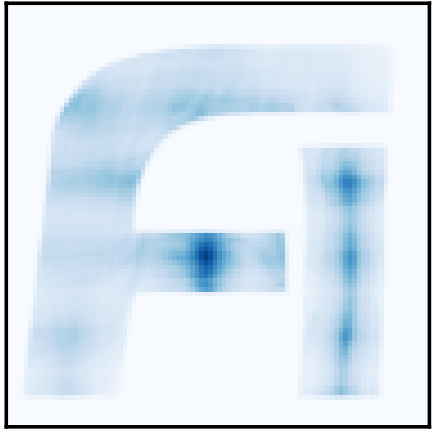
# Outline

# Normalizing flows (and some other models)

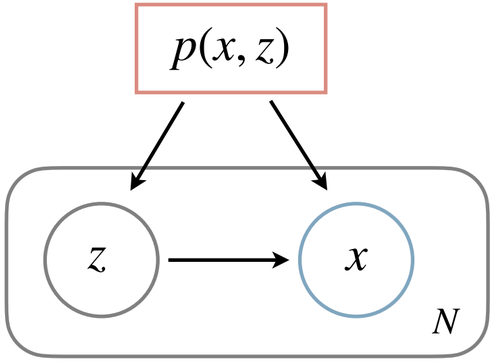
*Invertible transformations*



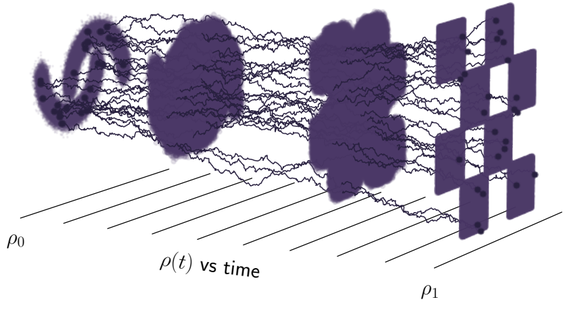
# Why (deep) generative modeling?

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




# Variational auto encoders

*Latent-variable modeling, and compression is all you need*



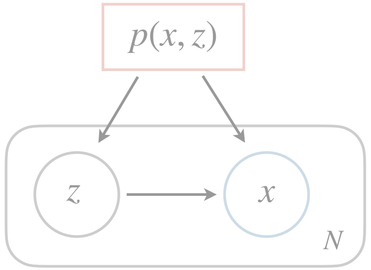

# Diffusion models

*Models based on iterative refinement*

# Outline

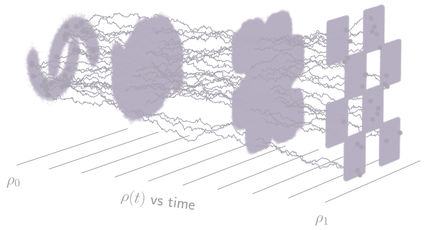

## Why (deep) generative modeling?

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



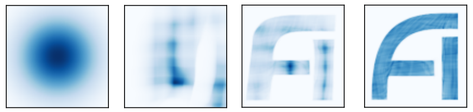

## Variational auto encoders

*Latent-variable modeling, and compression is all you need*




## Diffusion models

*Models based on iterative refinement*



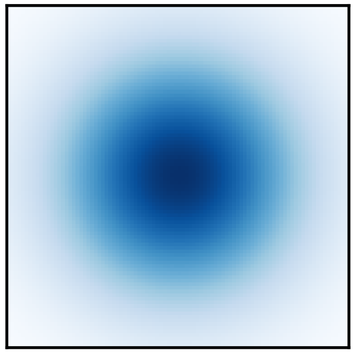
## Normalizing flows (and some other models)

*Invertible transformations*

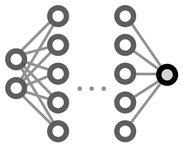
[Rezende & Mohamed 2015]

# Normalizing flows

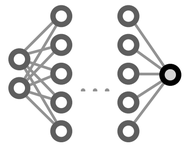
Base density



$\pi(u)$



$\theta = f(u)$



One-to-one transformation

Tractable $f^{-1}$ and $\det \nabla f$

*(IAIFI logo)*

Target density

$$p(\theta) = \pi\left(f^{-1}(\theta)\right) \left|\det \nabla f\right|^{-1}$$