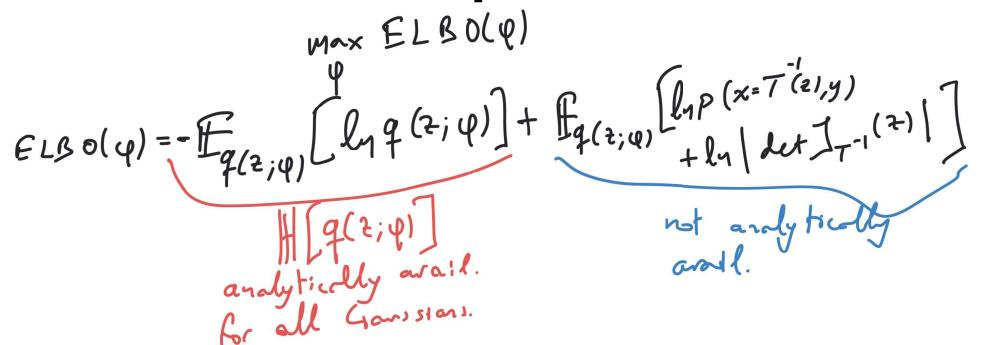
# Lecture 28: Variational Inference

**Professor Ilias Bilionis** 

### The variational problem in real space



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#### The reparameterization trick - Full/ low-rank Gaussian approximation

ELBO(
$$\varphi$$
) =  $H[q(z;\varphi)] + f[q(z;\varphi)] = h[q(z;\varphi)] h[q(z;\varphi)$ 



#### The reparameterization trick - mean-field Gaussian approximation

