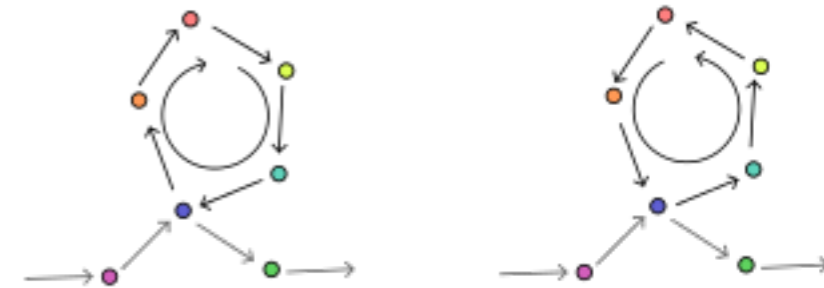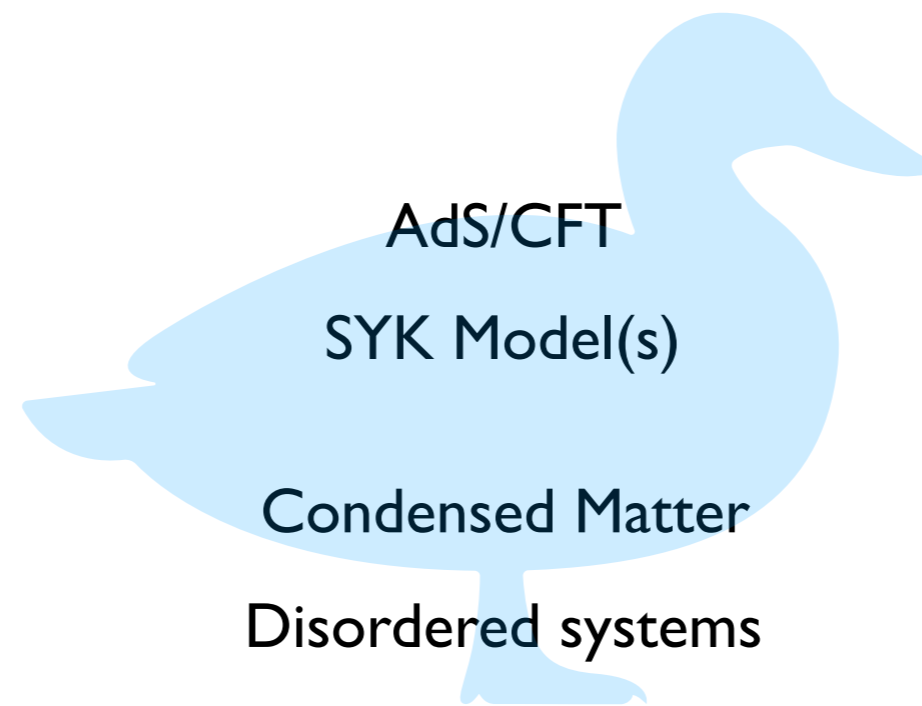# Bruno Loureiro

Before IPhT (@ TCM, Cam)

UV

CFT

z

IR

AdS/CFT

SYK Model(s)

Condensed Matter

Disordered systems
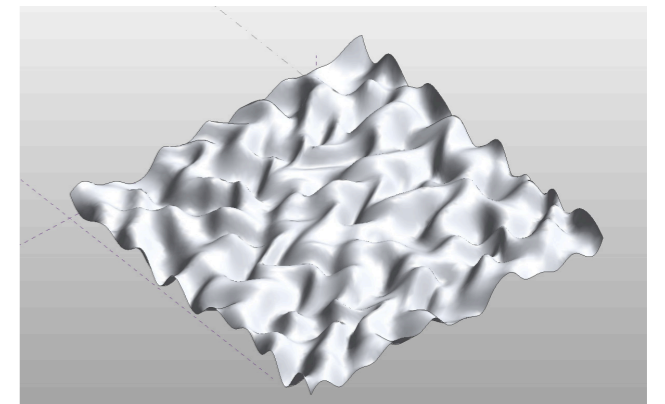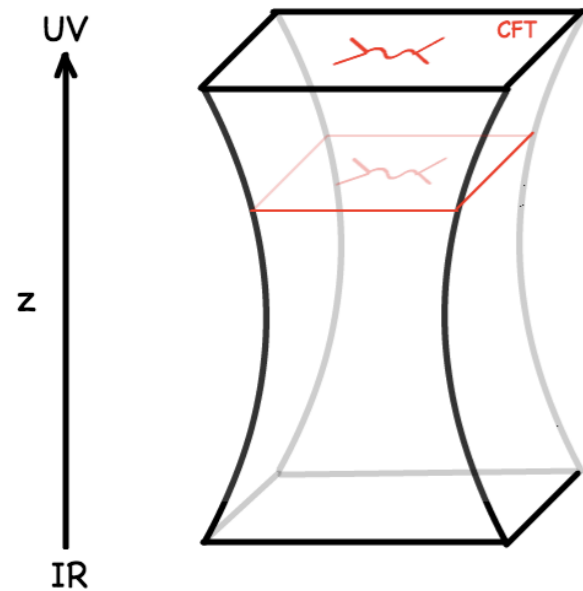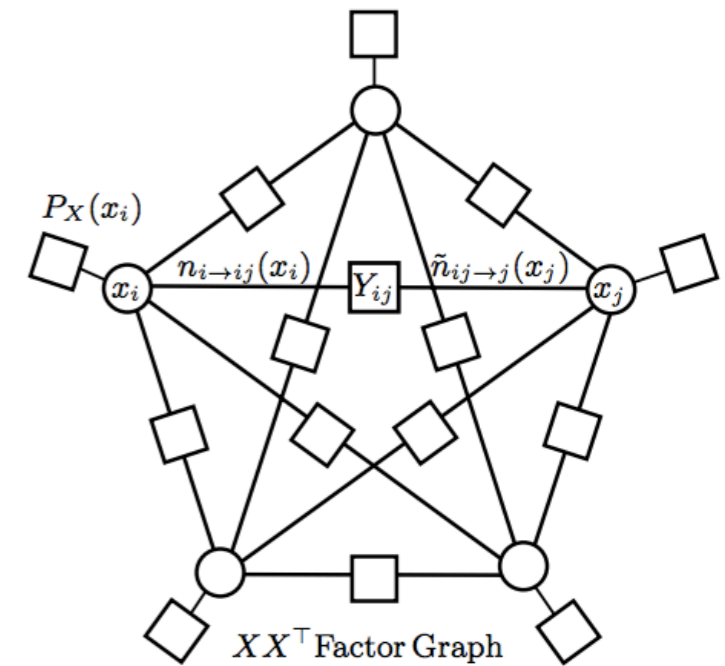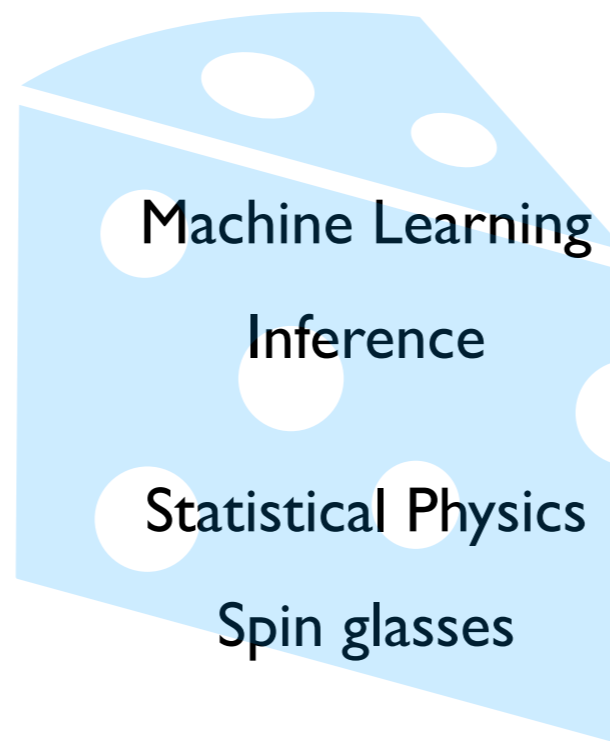
$$H = i^{q/2} \sum_{i<j<k<l} J_{ijkl} \chi_i \chi_j \chi_k \chi_l + \text{other stuff}$$

Bruno Loureiro

At IPhT (with Lenka)

Machine Learning

Inference

Statistical Physics

Spin glasses

$P_X(x_i)$

$n_{i \to ij}(x_i)$ Y_{ij} $\tilde{n}_{ij \to j}(x_j)$

x_i x_j

$XX^\top$ Factor Graph

$$p(X|Y) = \prod_i p_X(x_i) \prod_{i<j} p(Y|X) = \mathcal{Z}^{-1} e^{-\beta H}$$