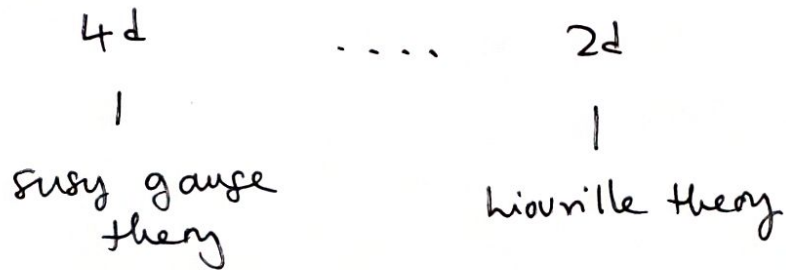


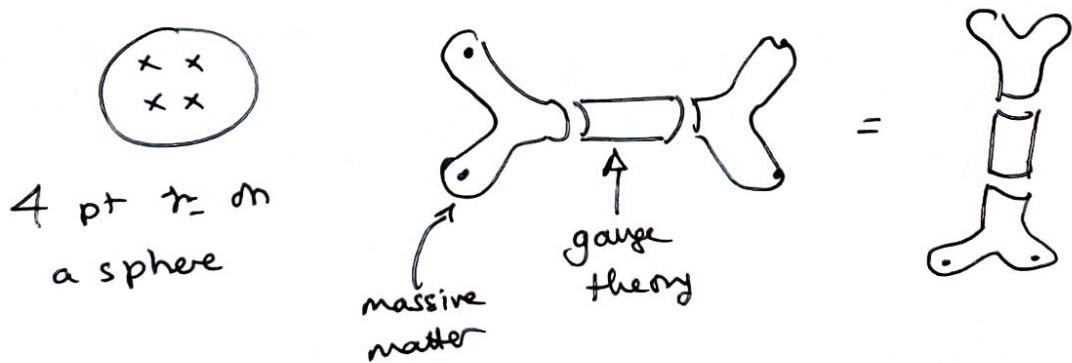
AGT correspondence.

Idea: wrap a  $(2,0)$  6d theory on a Riemann surface.



Extensive dictionary and many things in CFT can be calculated using dictionary.

CFT: "pants" decomposition of surface



Conformal dimensions of fields  $\longleftrightarrow$  mass of matter

complex structure eg value of cross ratio  $z \longleftrightarrow$  gauge coupling

Calculation is really involved.

Partition function on an  $\Omega$ -deformed background

Gives parameter  $b \leftrightarrow$  central charge

$$Q = b + \frac{1}{b}$$

$$c = 1 + 6Q^2 = 13 + 6b^2 + \frac{6}{b^2} \approx 25.$$

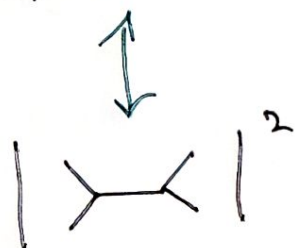
Partition function

$$Z = \int da \underbrace{Z_{\text{classical}}}_{(\text{prefactor})} \cdot Z_{1\text{-loop}} \cdot Z_{\text{instanton}}$$

$$\langle \varphi_1 \varphi_2 \varphi_3 \varphi_4 \rangle = \int d\alpha \frac{C_{12\alpha} C_{34\alpha}}{g_{d\alpha}} \left| \text{diagram} \right|^2$$

↑  
labelled by "holonomy  
momentum"  $\alpha$   
 $h = \alpha(Q - \alpha)$ .

↑  
continuous set of  
internal fields



$$Z_{\text{instanton}} = \sum_{(Y, Y')} q^{\# \text{ boxes}} Z(Y, Y')$$

Pairs of tableaux



$Z(Y, Y')$  contains product over boxes of many (simple) factors.

Too complicated to show even simplest result.

Agrees order by order (symbolic calculations).

- Can be proven by showing action of appropriate algebraic objects on Instanton space.
- Dictionary allows calculation (as series) of very many elements of CFT.