"CONJECTURE"

$\dim \mathcal{U} < \infty$ WEAK.

"LOCALIZATION" STRONG.

$$\int \mathcal{D}g\, e^{-\xi_\varepsilon(S)} = \int_M e$$

POLCHINSKI

SOME EXAMPLE IS QG.

ALL

$-N_T V(M)$

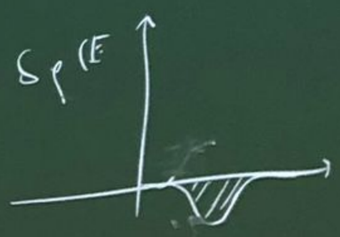
$$\int \mathcal{D}g\, e^{-S_E(g)} = \int_M e^{-V(M)}$$

"WORLDTUBES"

2209.06144

$$S = -\frac{1}{2}\int d^2x\sqrt{g}\,\phi R + U(\phi) - \int_{\partial}\sqrt{h}\,\phi K$$

2209.06144



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FINITE FEATURES IN QUANTUM GRAVITY

2206.18193
Mühlmann
Galante
Demet
Law
Sun
Hofmann...
Harris
Aros.

* MOTIVATION/PREAMBLE
* HINTS (LORENTZIAN; EUCLIDEAN)
* A "CONJECTURE"

EXCEPTIONS

* SYK. $\dim \mathcal{H} < \infty$
* TOP QFT $\leftrightarrow$ Top STRINGS.
* BPS CALCULATIONS.

$\dim \mathcal{H} = \infty$ (QFT)
INFINITE VOLUME IN BULK

* HOLOGRAPHIC RG ($T\bar{T}$)
* COUPLING DUAL CFT GRAVITY

$\to$ EFT? ; UNITARITY.

+others w/ Alishahiha et al., De Luca, Doug, Gorbenko, Lewkowycz, Liu, Torroba...

Connections with many other works...

* NEGATIVE NORM STATES?

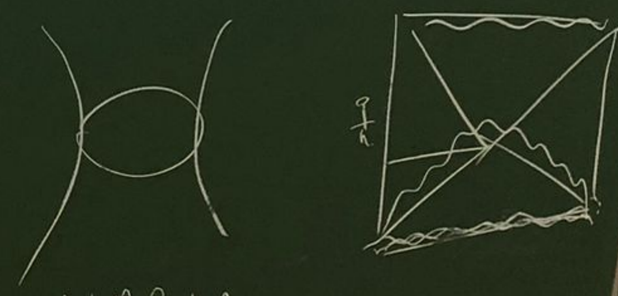
$Z = Z_{bulk}$

Z_{edge}

* 2D QUANTUM + MINIMAL MODELS

* NEGATIVE TRACE $c < 0$

DE SITTER

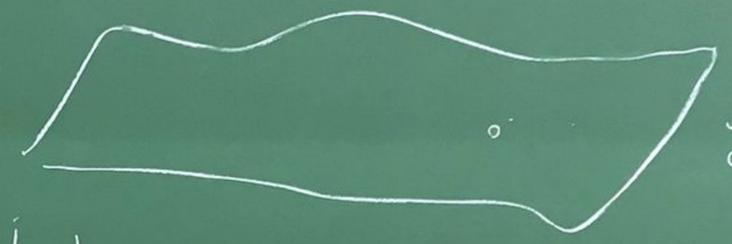


NARIAI BOUND

* EUCLIDEAN.

S^4 $= \frac{A}{4G}$

* HIGHER SPIN DS?



$\{ \phi^{(x)}_{I}, g^{(x)}_{\mu\nu}, h^{(x)}_{\mu\nu\rho}, \dots \}$

$\hat{Q}^{(x)}_{I} \hat{Q}^{(y)}_{I}$

$I = 1, 2, \dots, N$

$\#\text{d.o.f} \approx N = \frac{l^2}{l_{pl}^2}$