Title: PSI 2018/2019 - AdS/CFT - Lecture 6

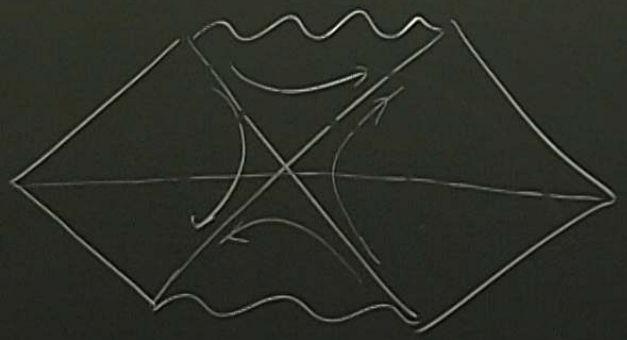
Speakers: Juan Maldacena

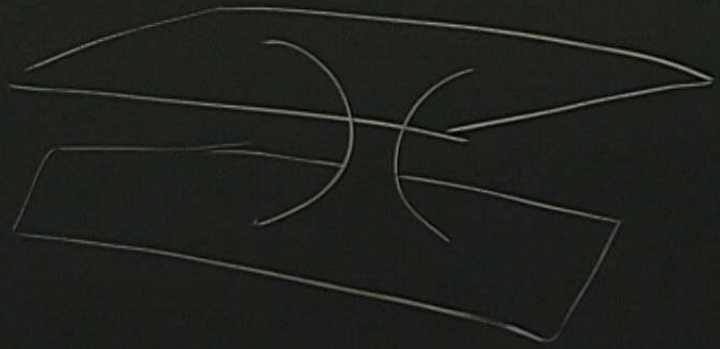
Collection: PSI 2018/2019 - AdS/CFT (Ali)

Date: April 23, 2019 - 10:15 AM

URL: http://pirsa.org/19040130

WORMHOLES & ENTANGLEMENT





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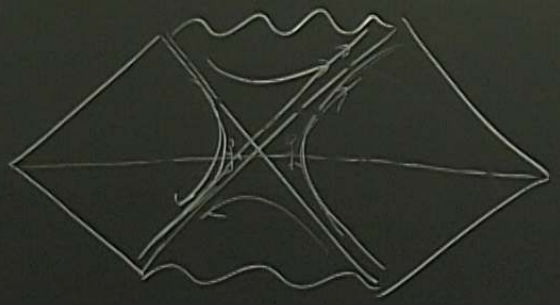
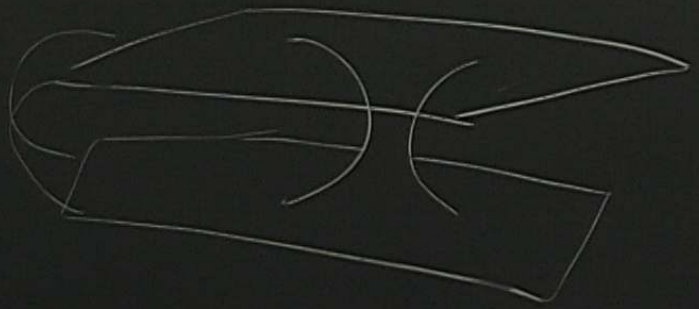
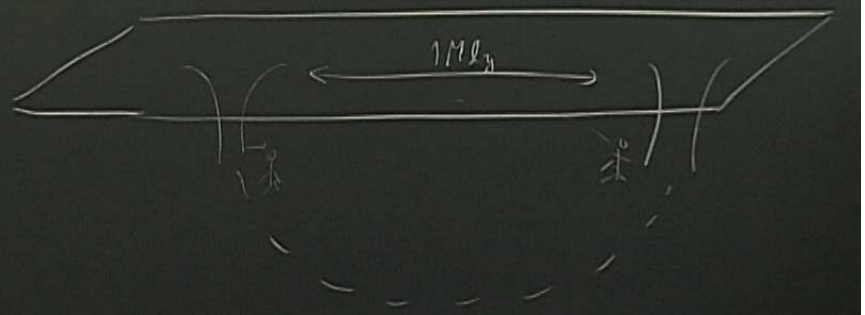




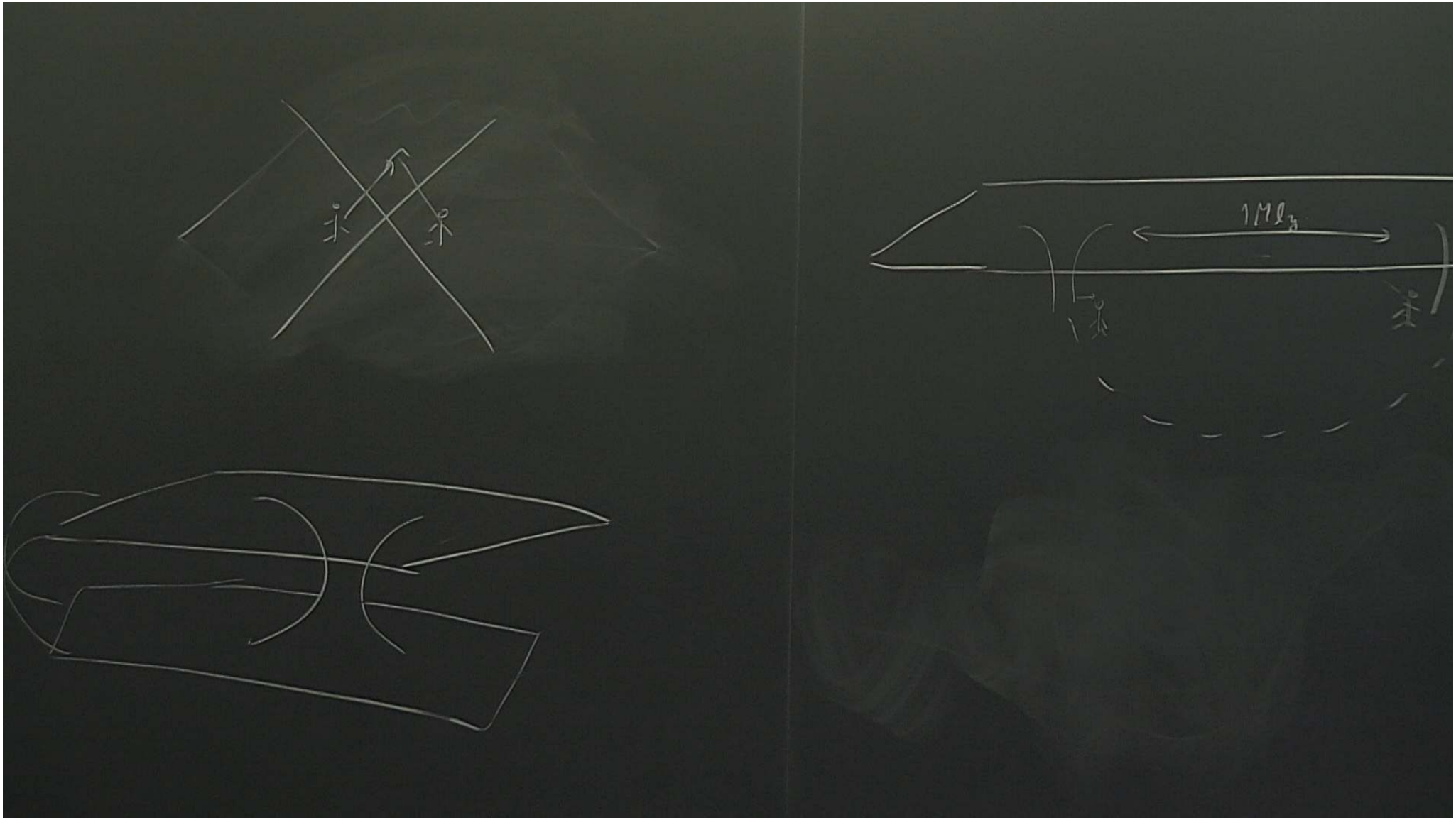


Th: No science fiction wormhole

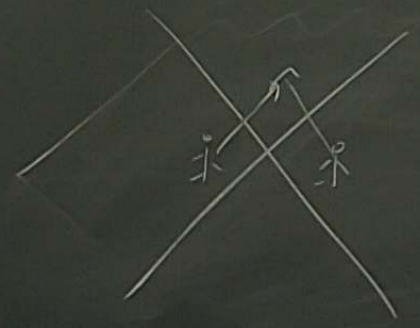
1) Einst eqn.

2) AANEC

$$\int_{-\infty}^{\infty} dx' T_{++} \geq 0 \qquad \langle T^{(N)}_{++} \rangle \text{ can be neg}$$


1 Ml$_2$

WORMHOLES & ENTANGLEMENT



ASSUMPTION

BH $\approx$ Unitary QM theory

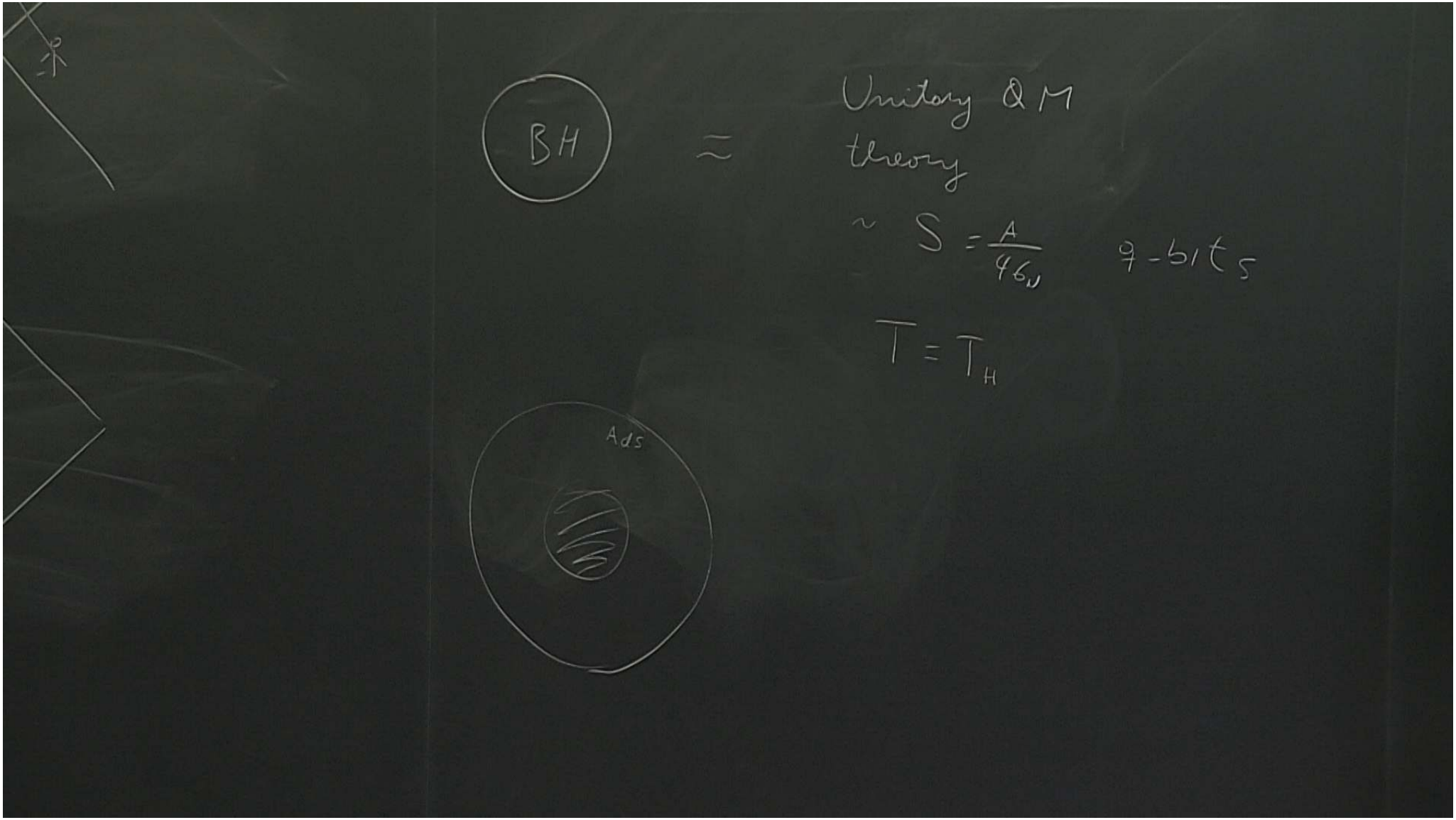
$\sim S = \frac{A}{4G_N}$ 9-bits

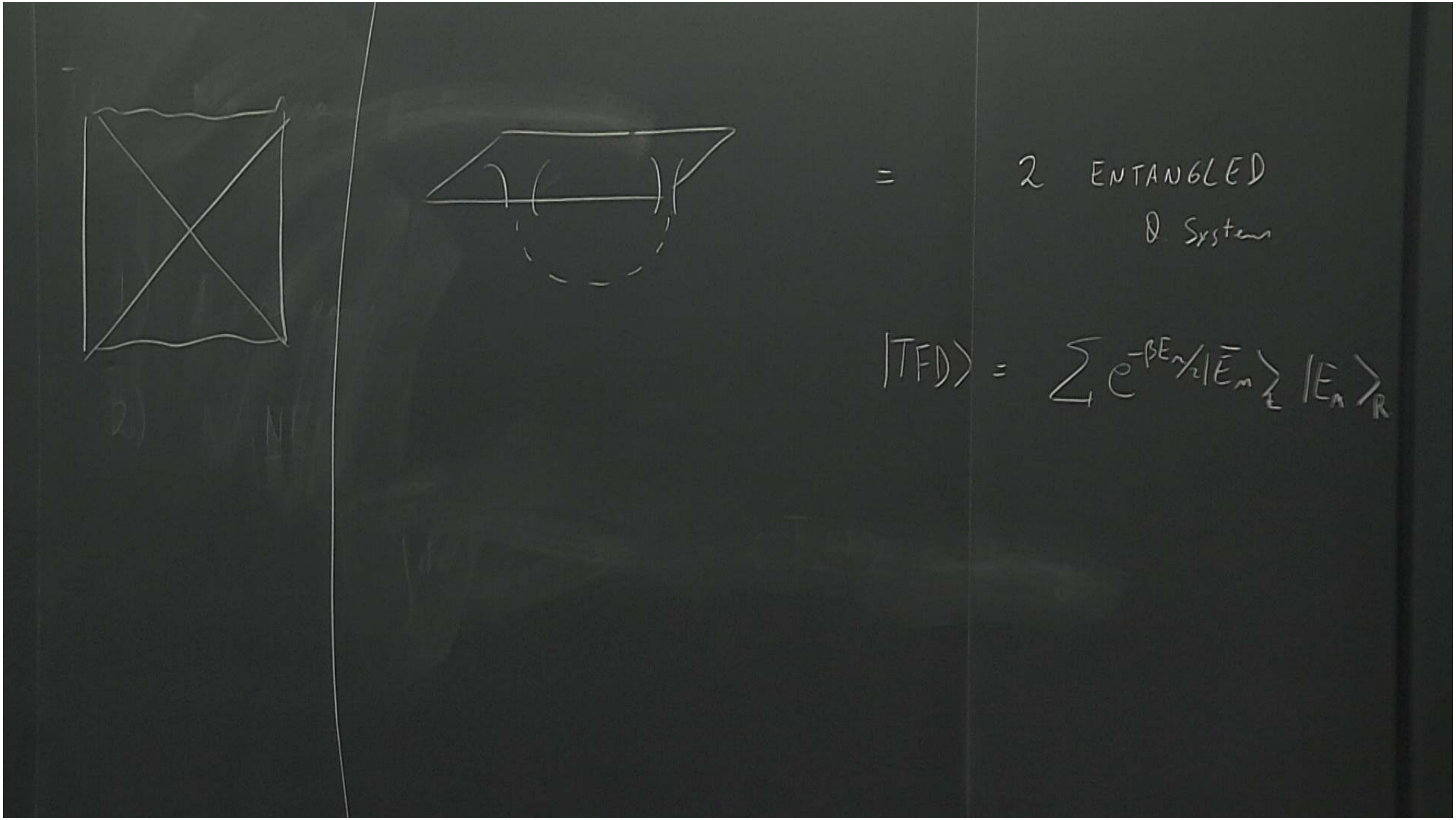
$T = T_H$

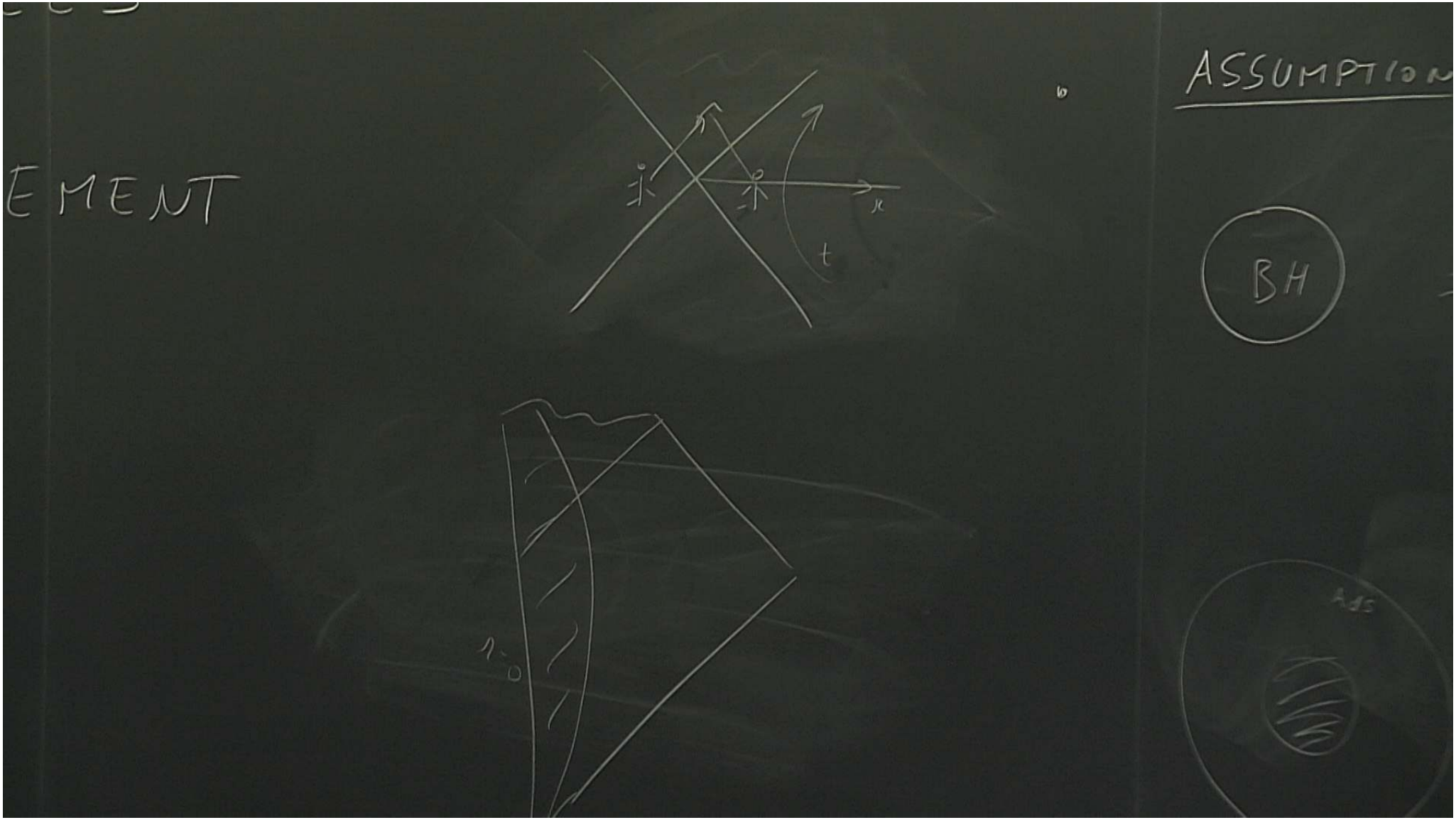
Th: No

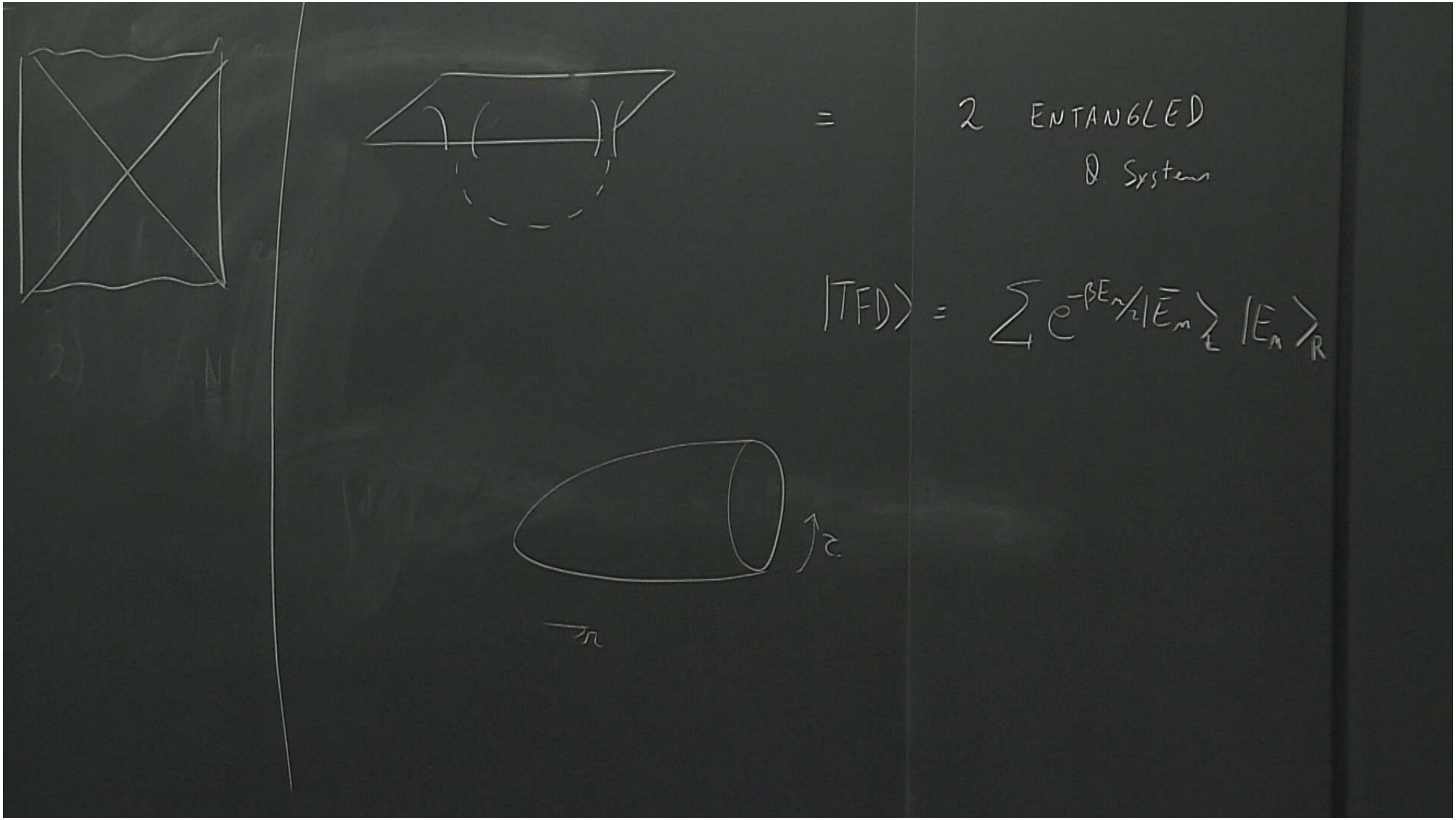
1) Ein

2) AA


BH
≃
Unitary QM
theory
~ S = A/4G_N
9-bits
T = T_H
Ads

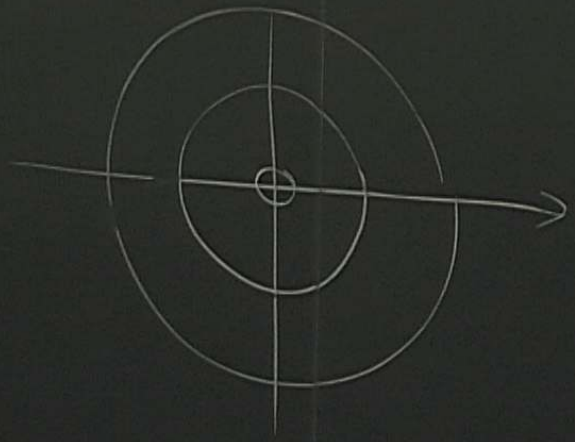

= 2 ENTANGLED
Q Systems
$|TFD\rangle = \sum_n e^{-\beta E_n/2} |\bar{E}_n\rangle_L |E_n\rangle_R$

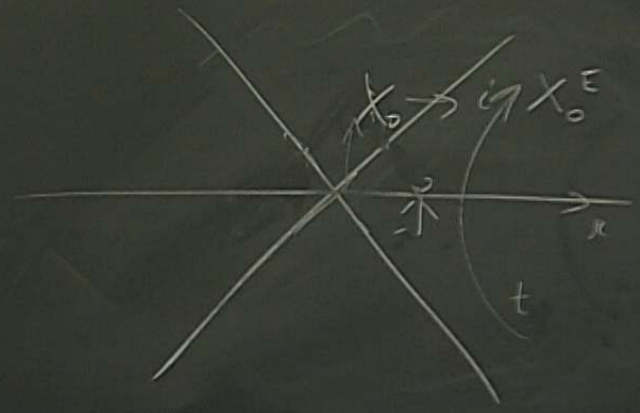

EMENT
ASSUMPTION
BH
AdS

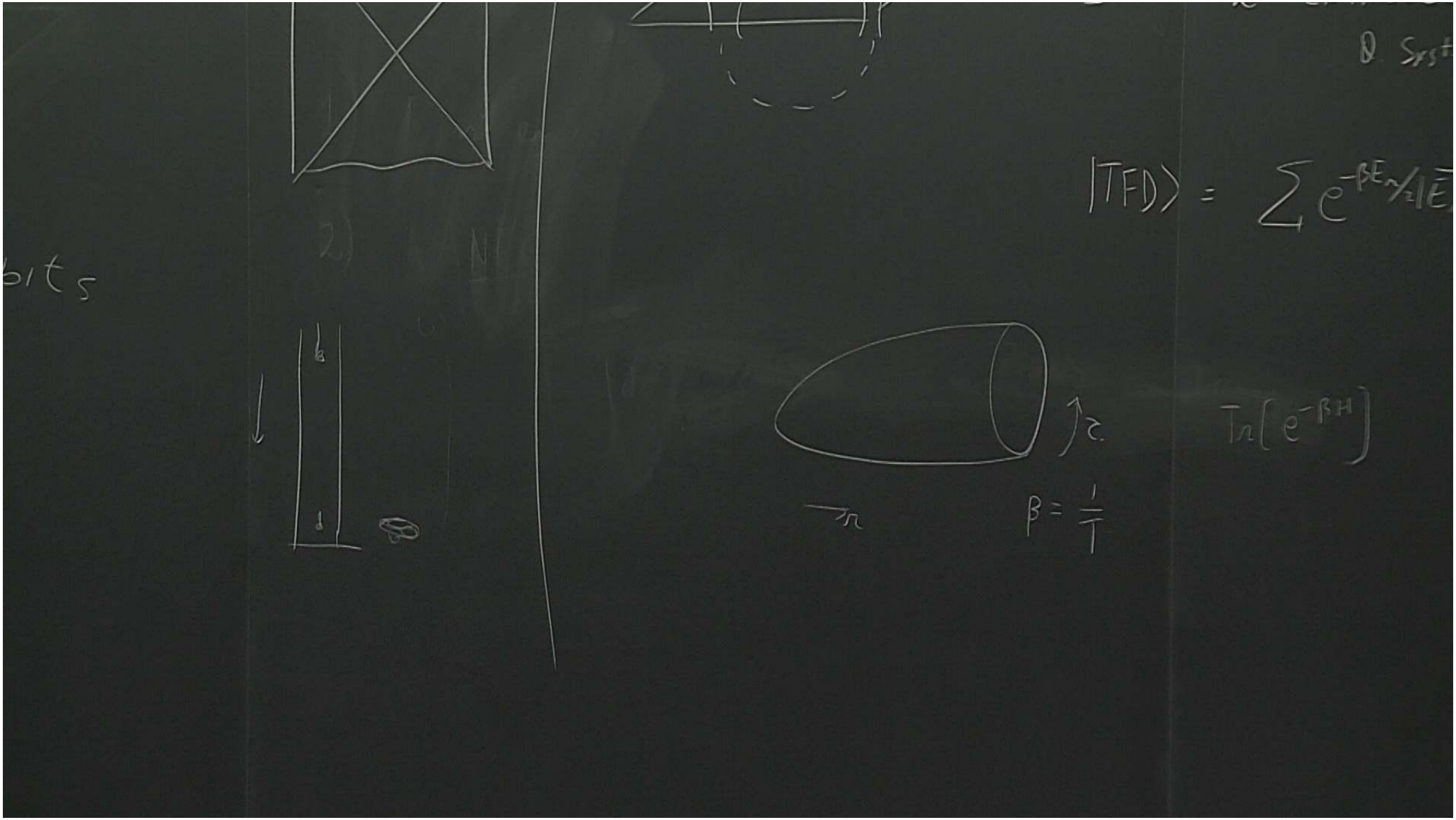

=
2 ENTANGLED
QSystems
$|TFD\rangle = \sum e^{-\beta E_n/2} |\bar{E}_n\rangle_L |E_n\rangle_R$
τ
π

&

ENTANGLEMENT



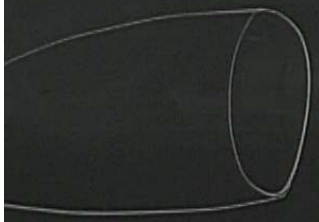



bits
$|TFD\rangle = \sum e^{-\beta E_n/2}|E$
$\beta = \frac{1}{T}$
$Tr[e^{-\beta H}]$

$= \quad 2$ ENTANGLED

$\emptyset$ System

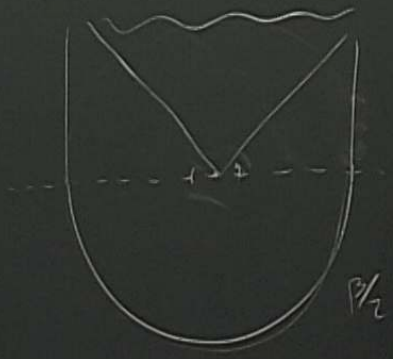
$$|TFD\rangle = \sum e^{-\beta E_n/2} |\bar{E}_n\rangle_L |E_n\rangle_R$$

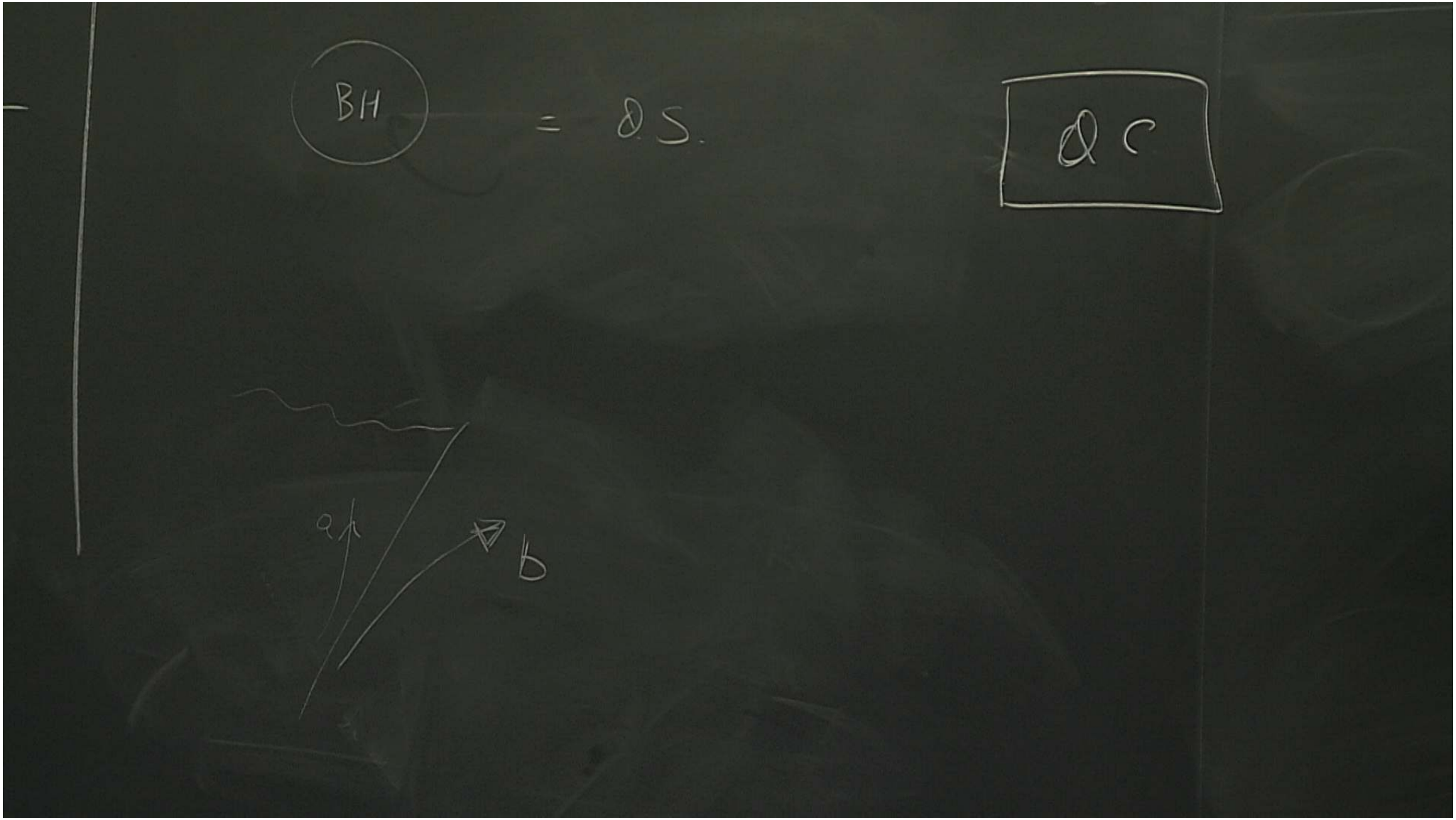


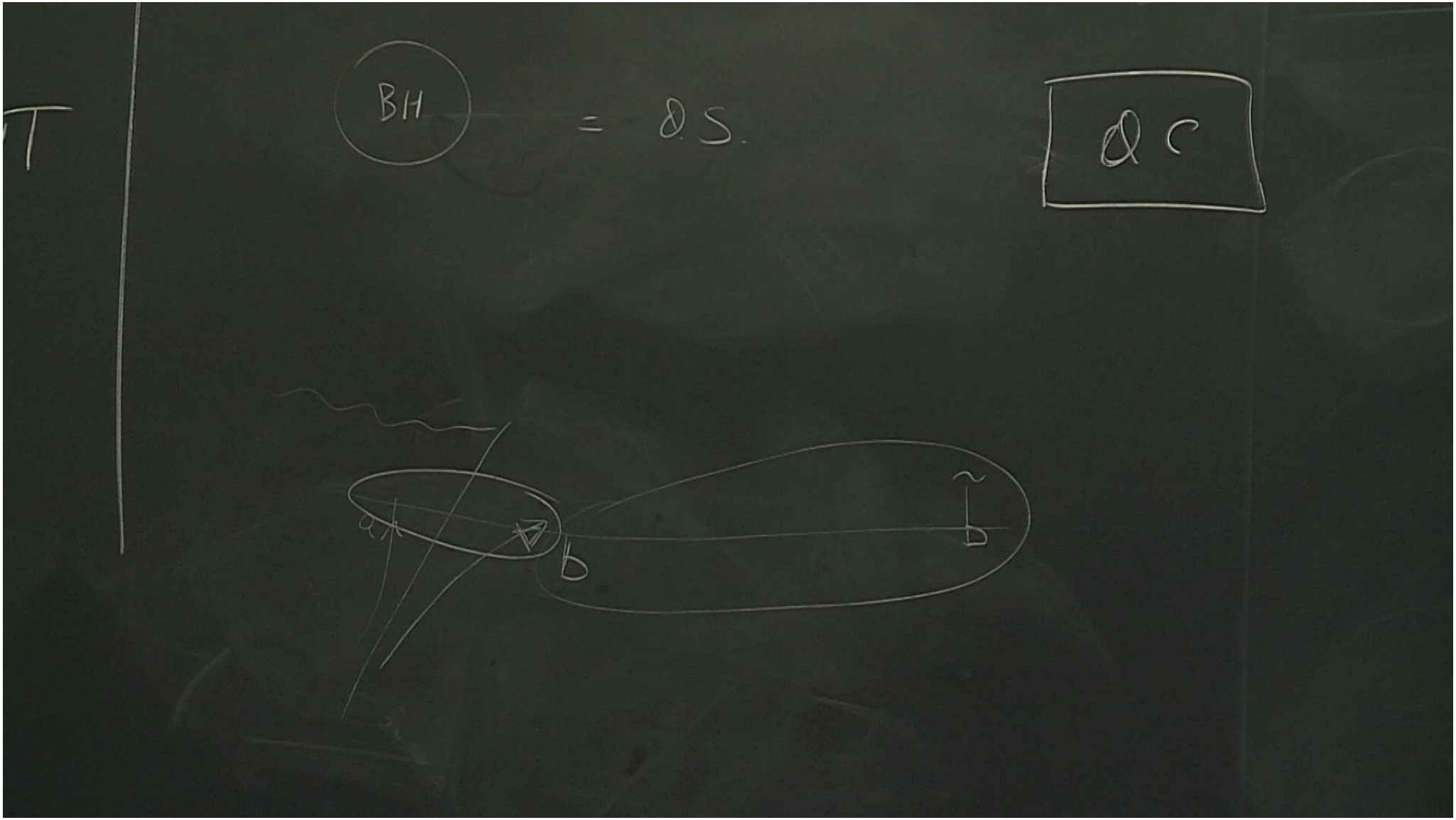
β

$$\beta = \frac{1}{T}$$

$$Tr\left[e^{-\beta H}\right]$$




BH
= δS.
δC
a
b


BH
= δS.
δC
b
b

= 2 ENTANGLED

∅ Systems

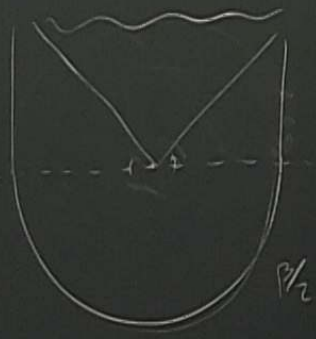
e^{-iaB} $e^{-i(E_m - E_m)a}$

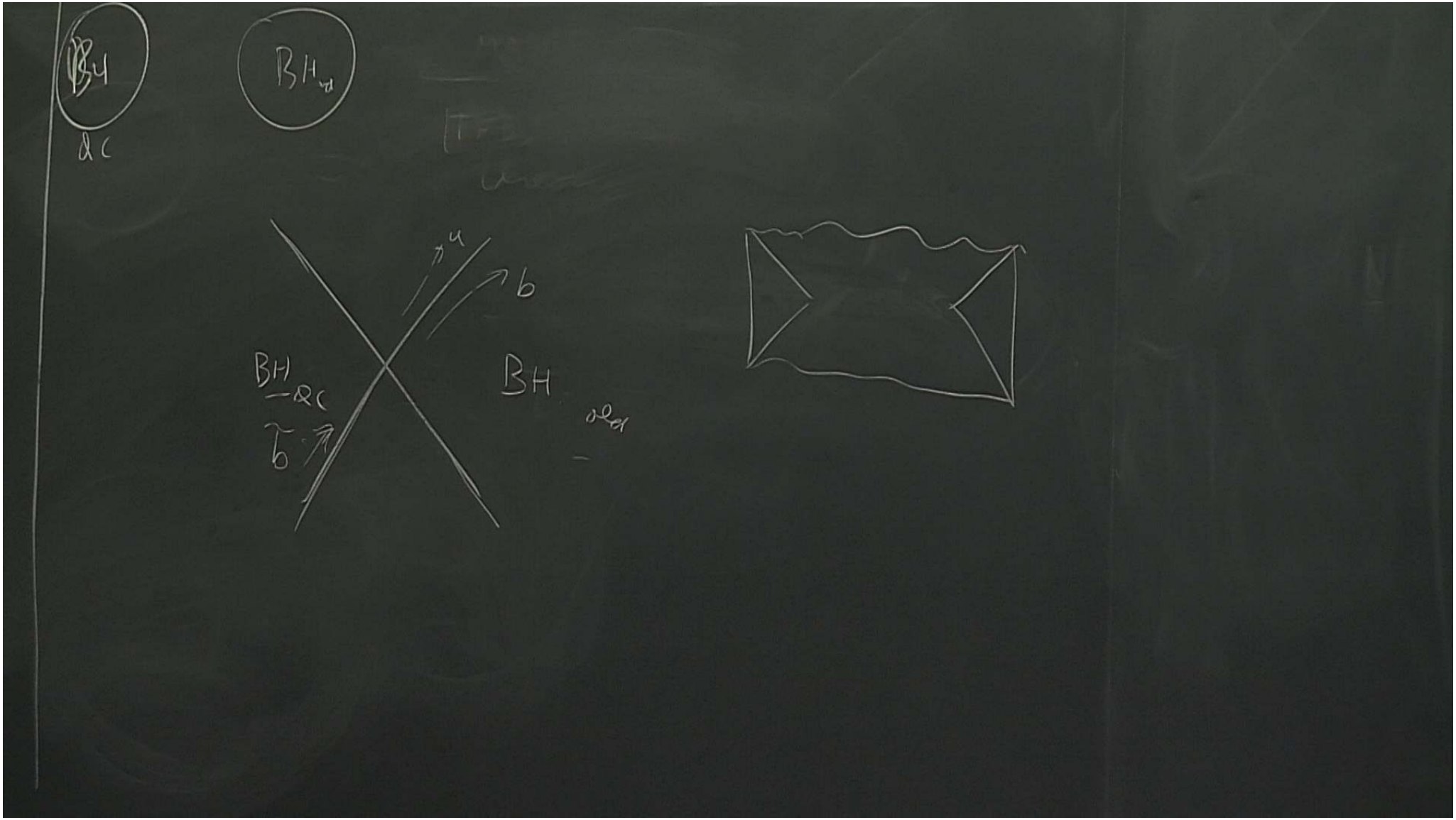
$|TFD\rangle = \sum_m e^{-\beta E_m/2} |\bar{E}_m\rangle_L |E_m\rangle_R$

$H = H_L + H_R$

$T_R[e^{-\beta H}]$ $B = -H_L + H_R$

$\beta = \frac{1}{T}$




BH
QC
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u
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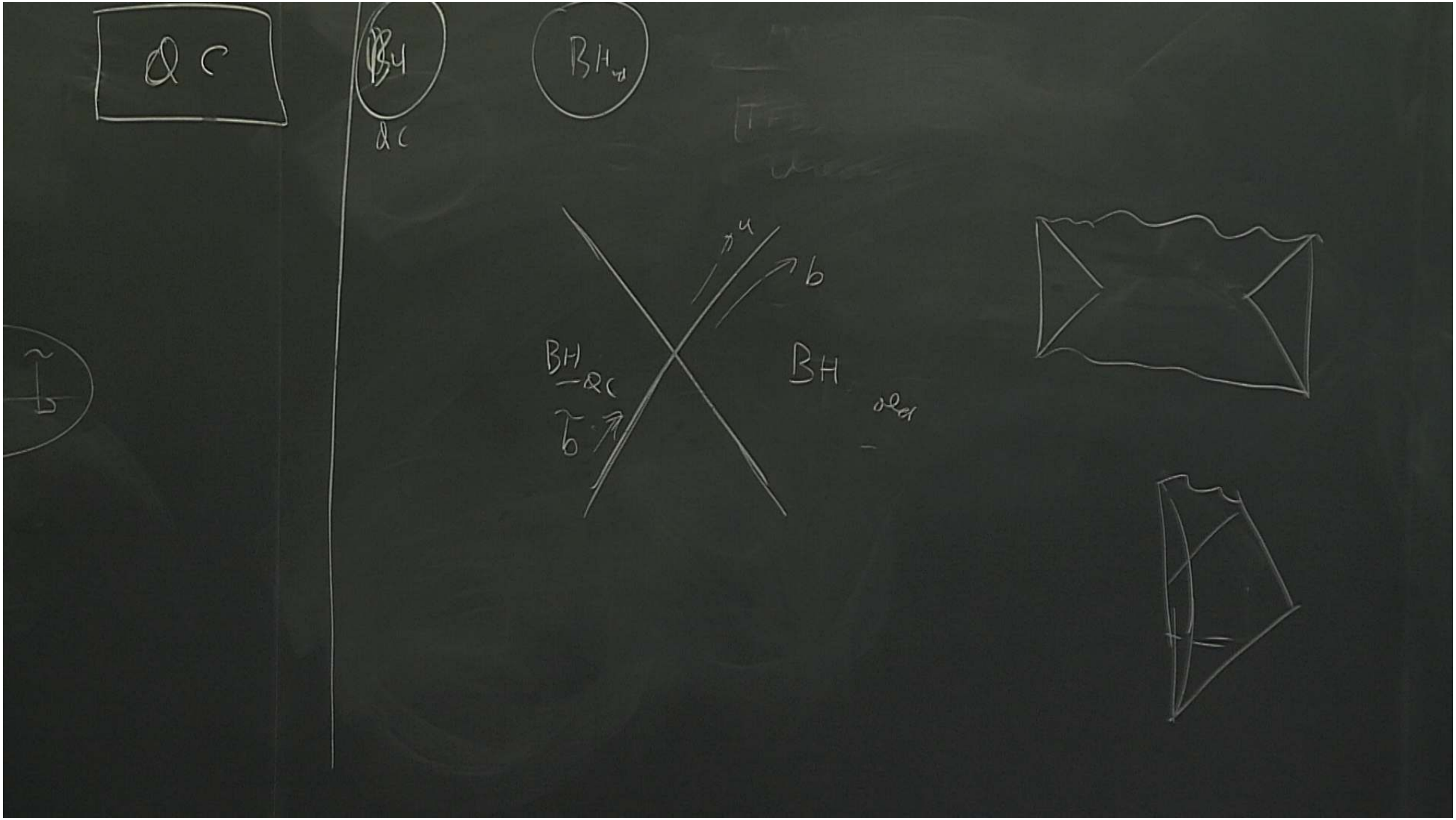
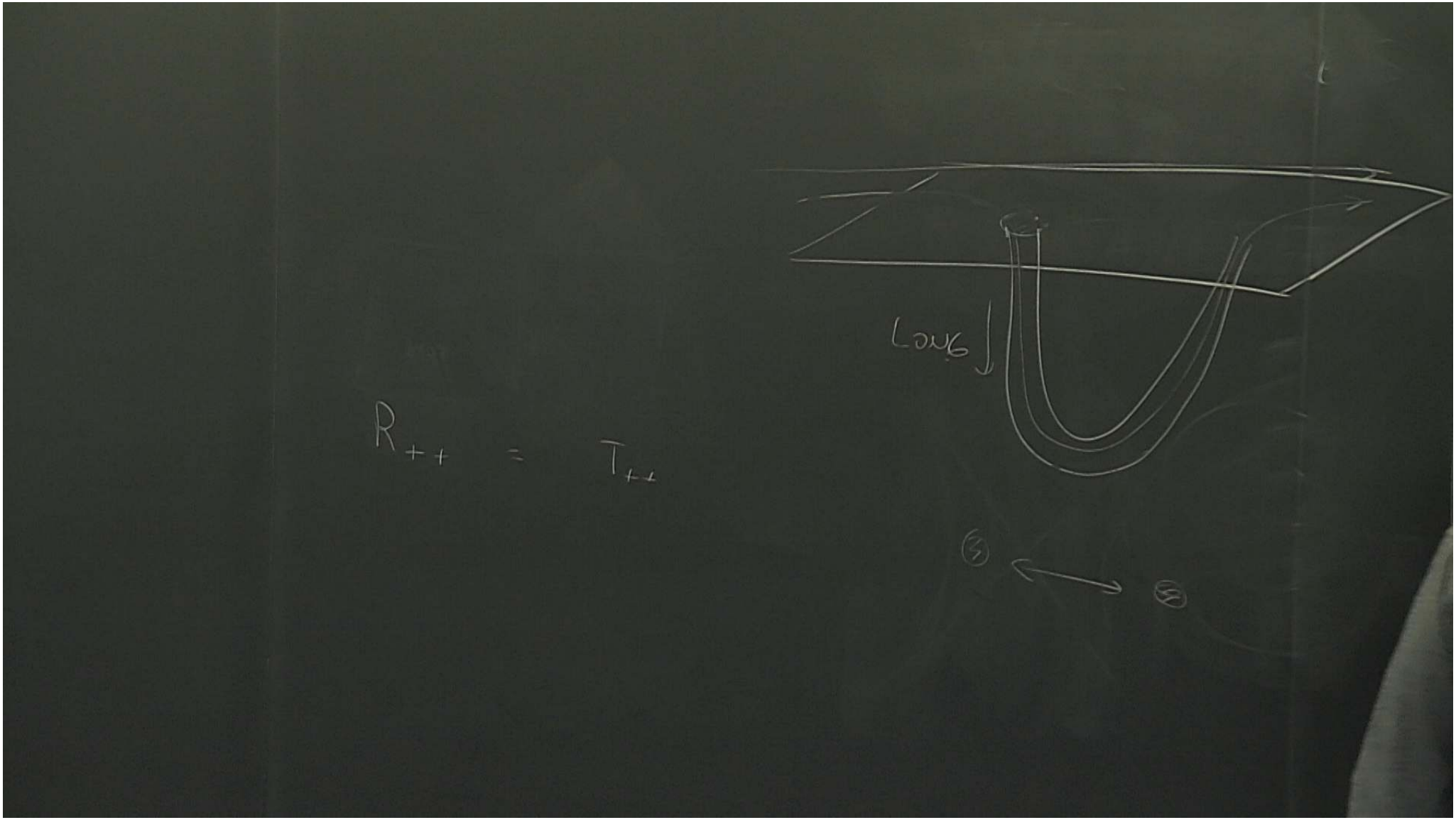
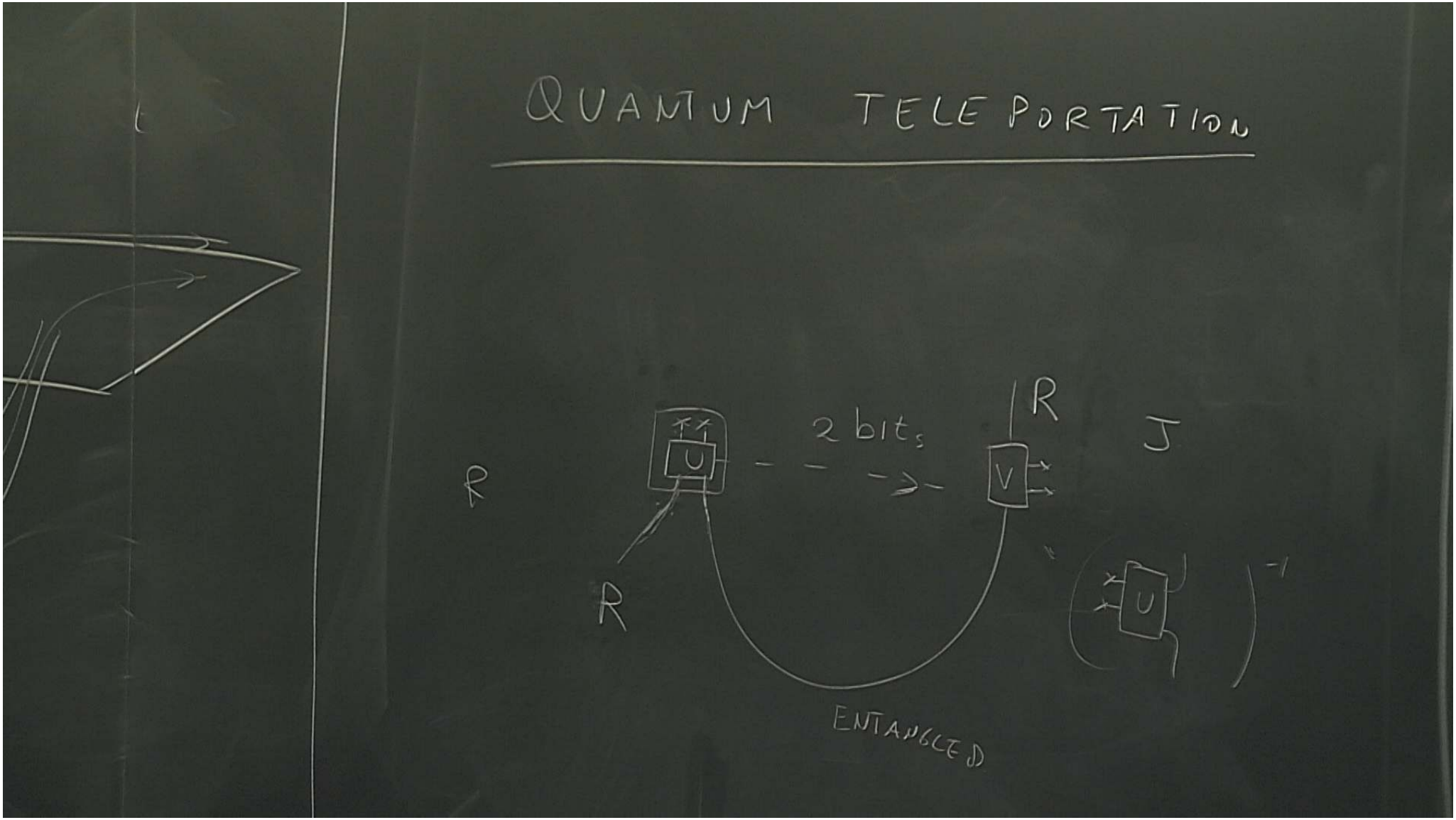
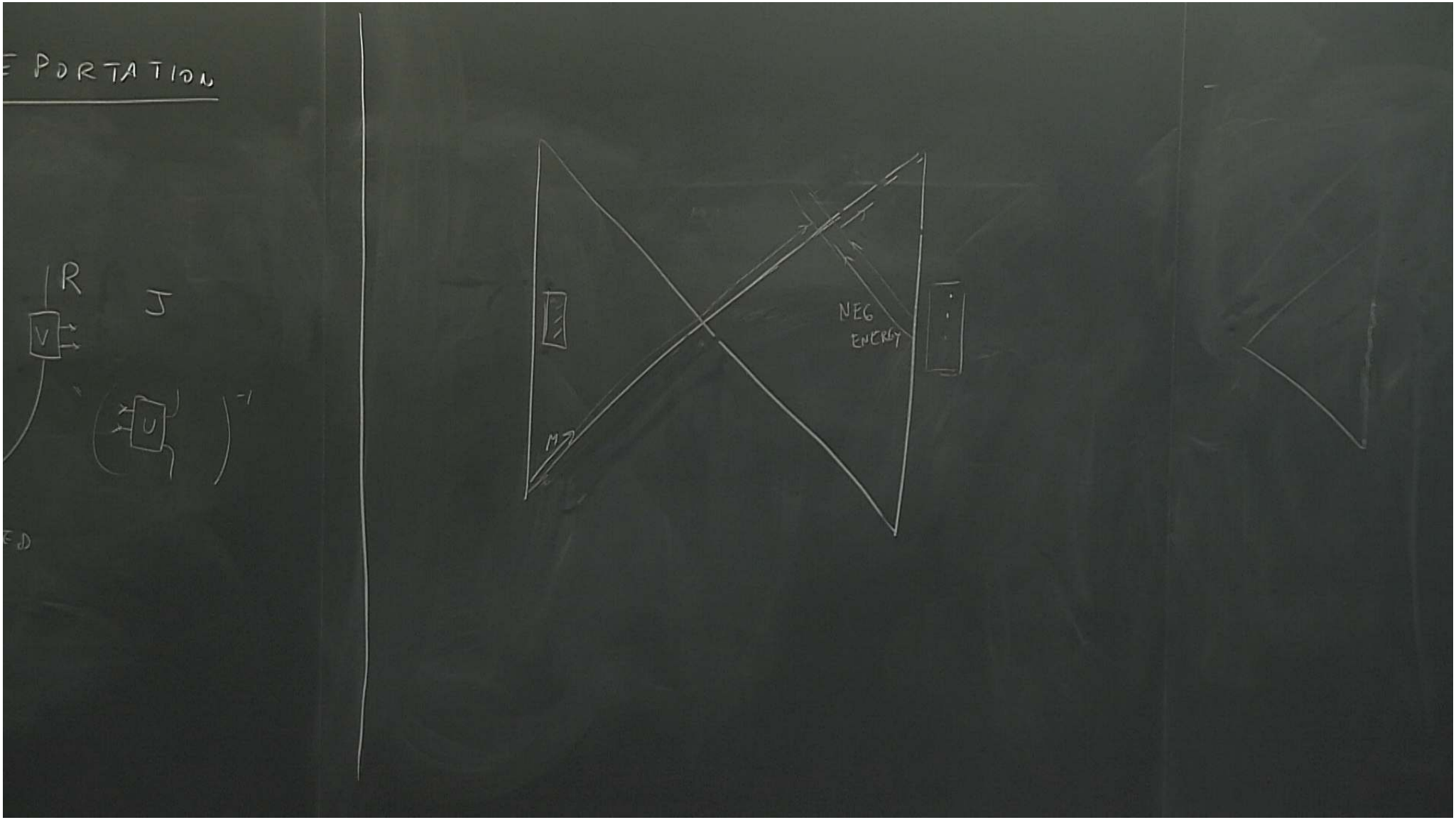
QC
b
BH

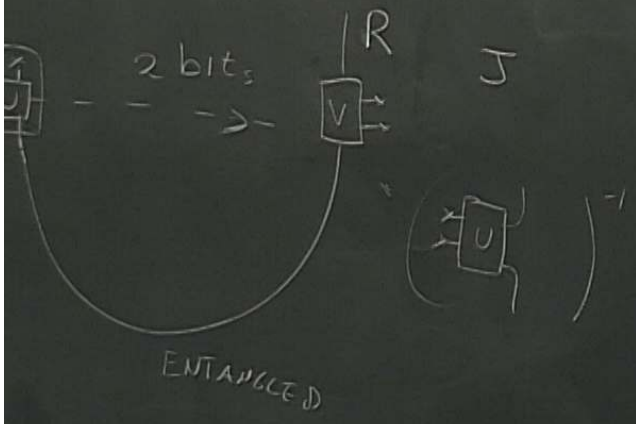

QC
BH
QC
BH
b
BH
QC
BH

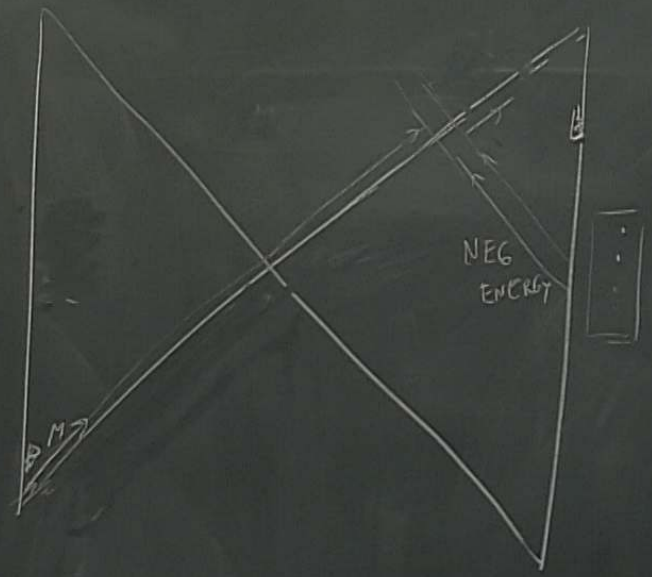

LONG
$R_{++} = T_{++}$


QUANTUM TELEPORTATION
R
U
2 bits
R
V
J
R
U
ENTANGLED

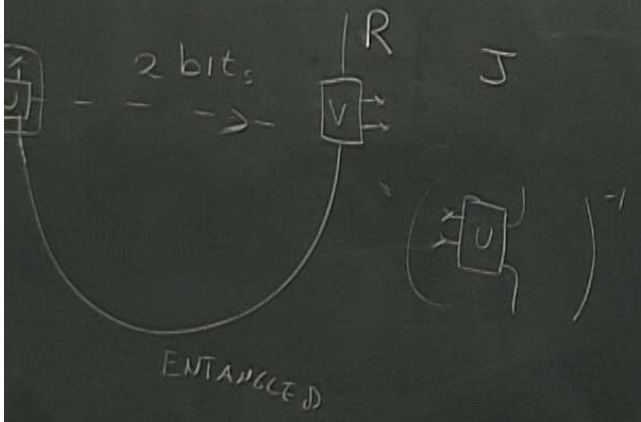

E PORTATION
R
J
V
U
NEG
ENERGY
M

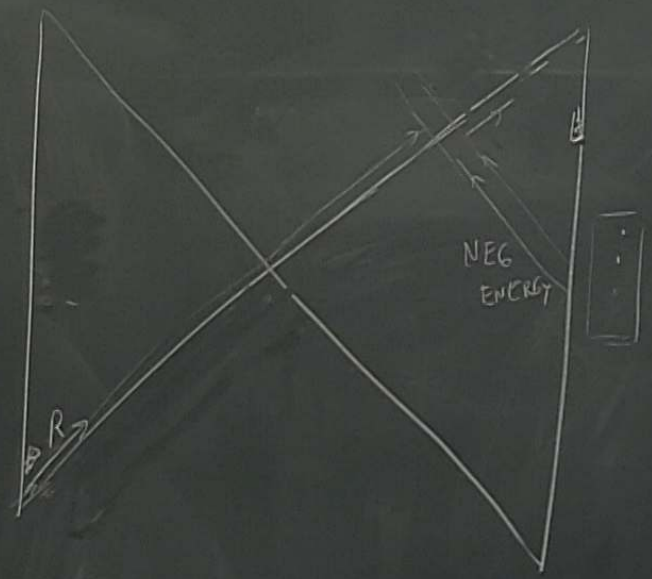
UM TELEPORTATION

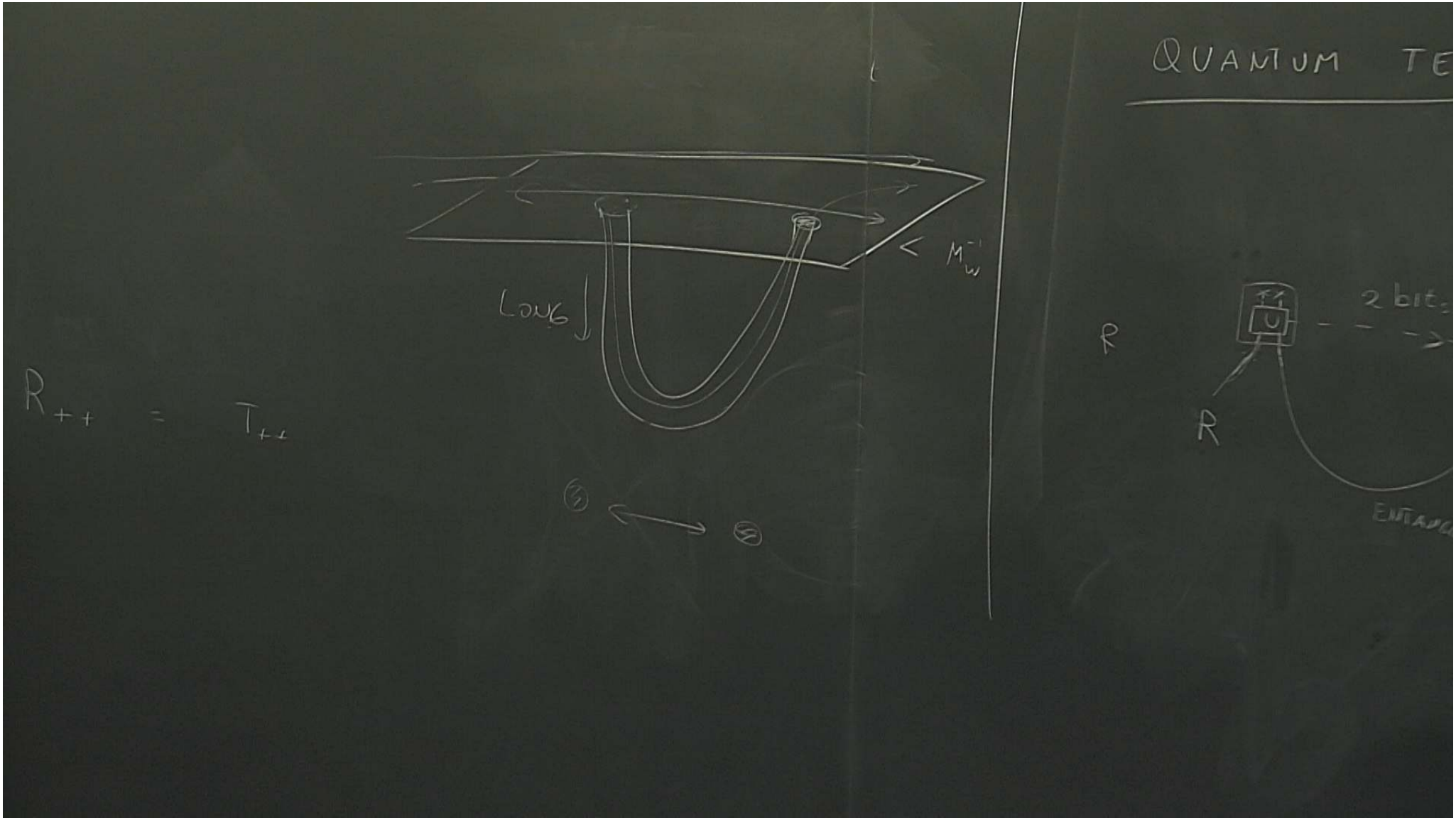


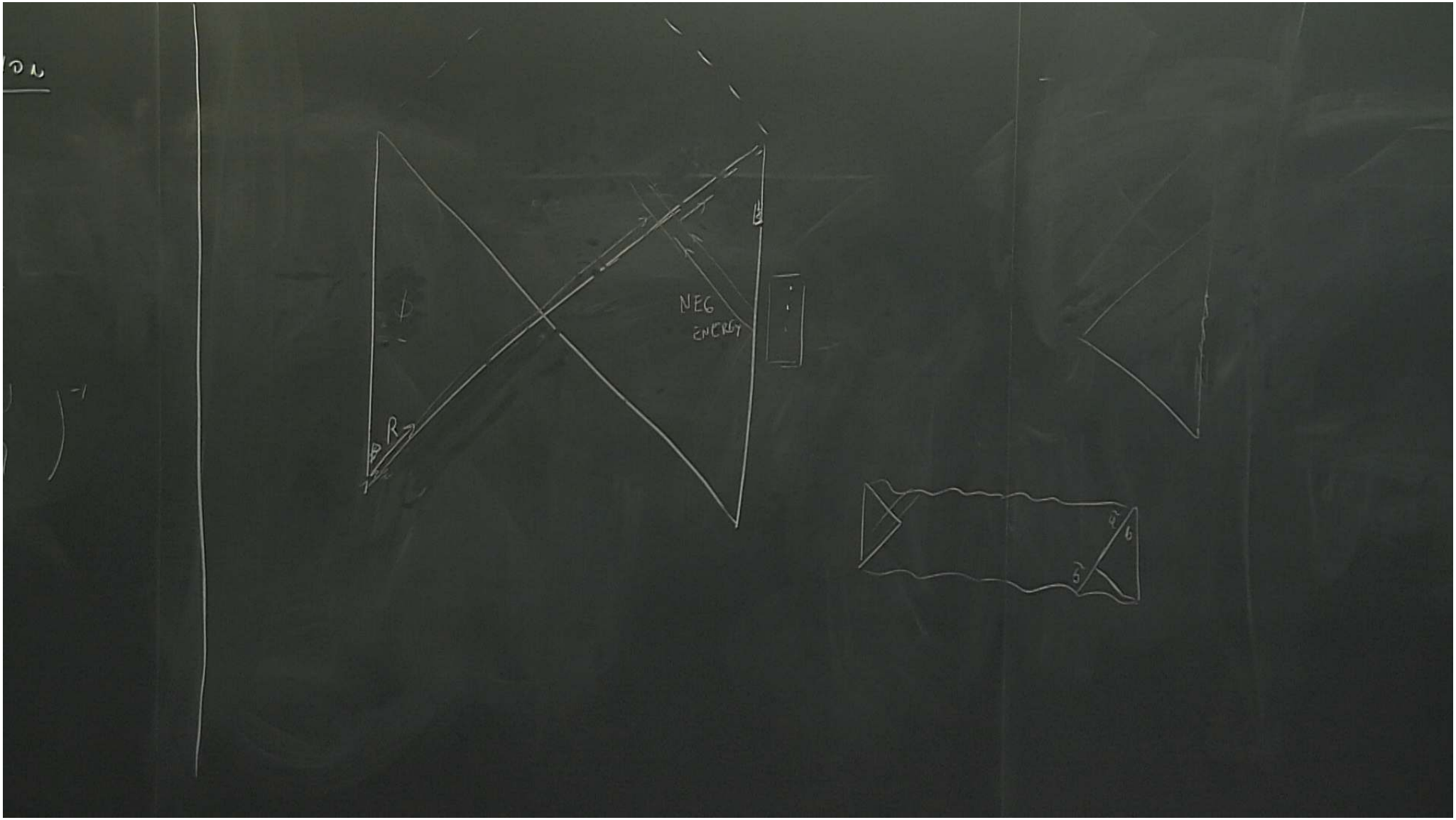


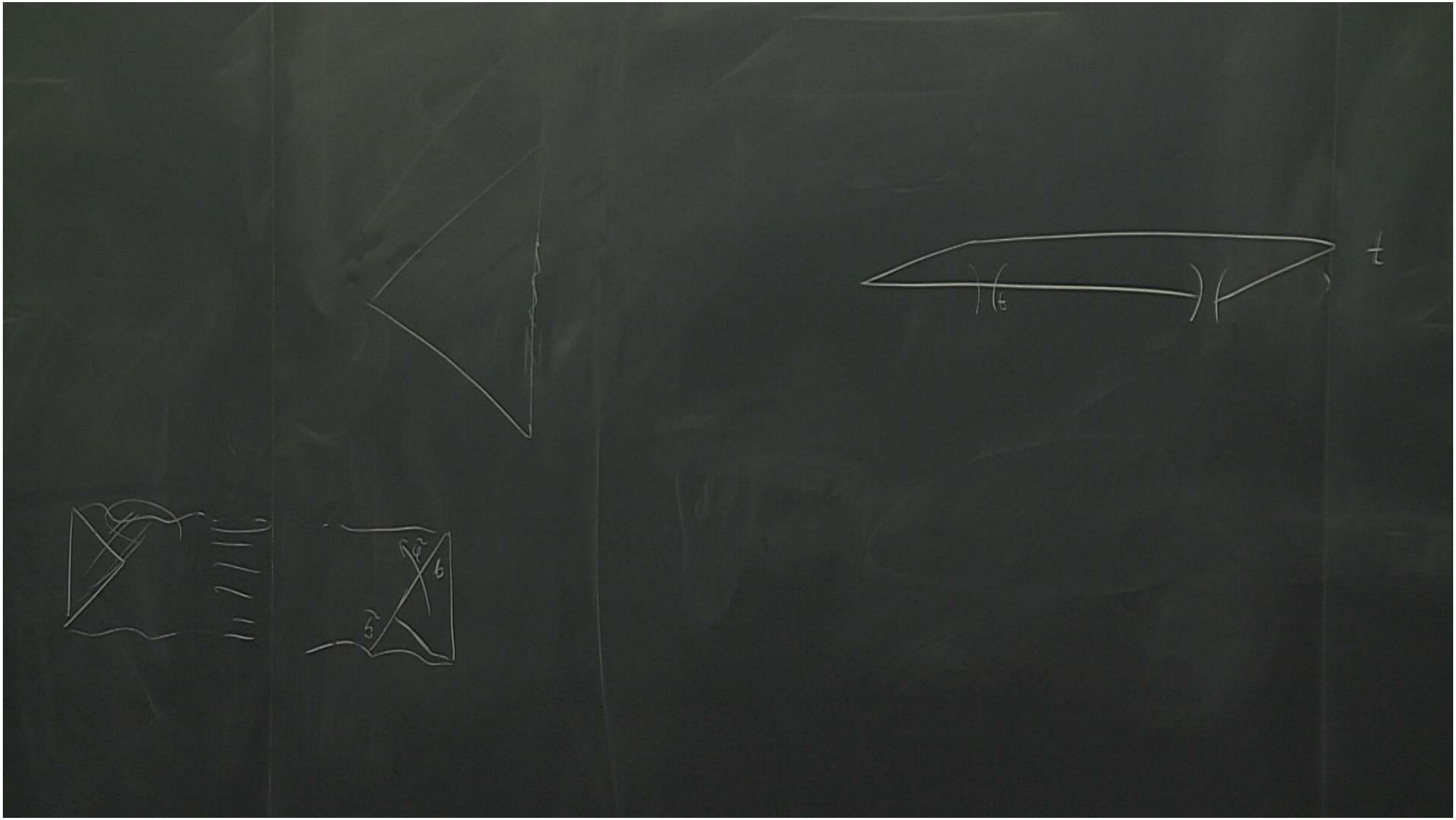
UM TELEPORTATION






QUAMUM TE
M_w^{-1}
LONG
$R_{++} = T_{++}$
R
2 bit
R
ENTANG


NEG
ENERGY
R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