Title: PSI 2018/2019 - String Theory Review - Lecture 11

Speakers: Davide Gaiotto

Collection: PSI 2018/2019 - String Theory Review (Gaiotto)

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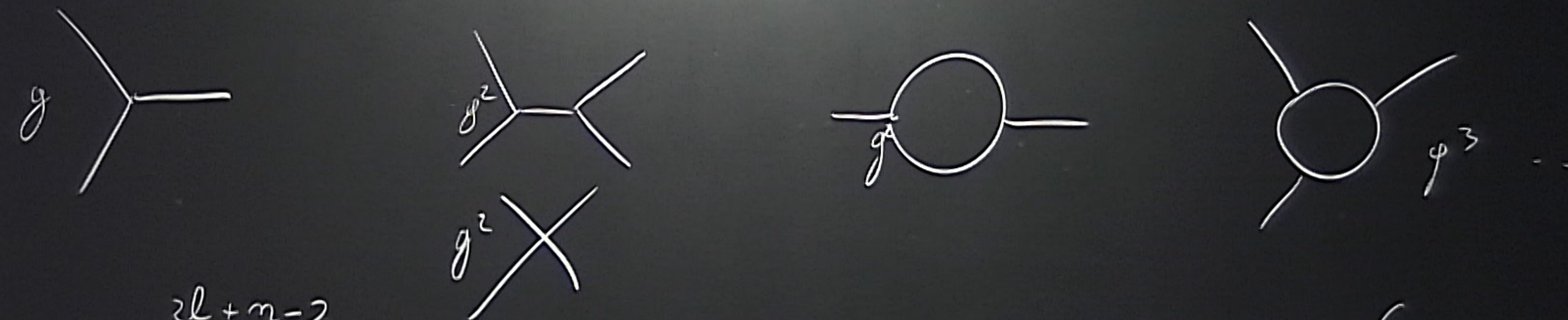
URL: http://pirsa.org/19040036

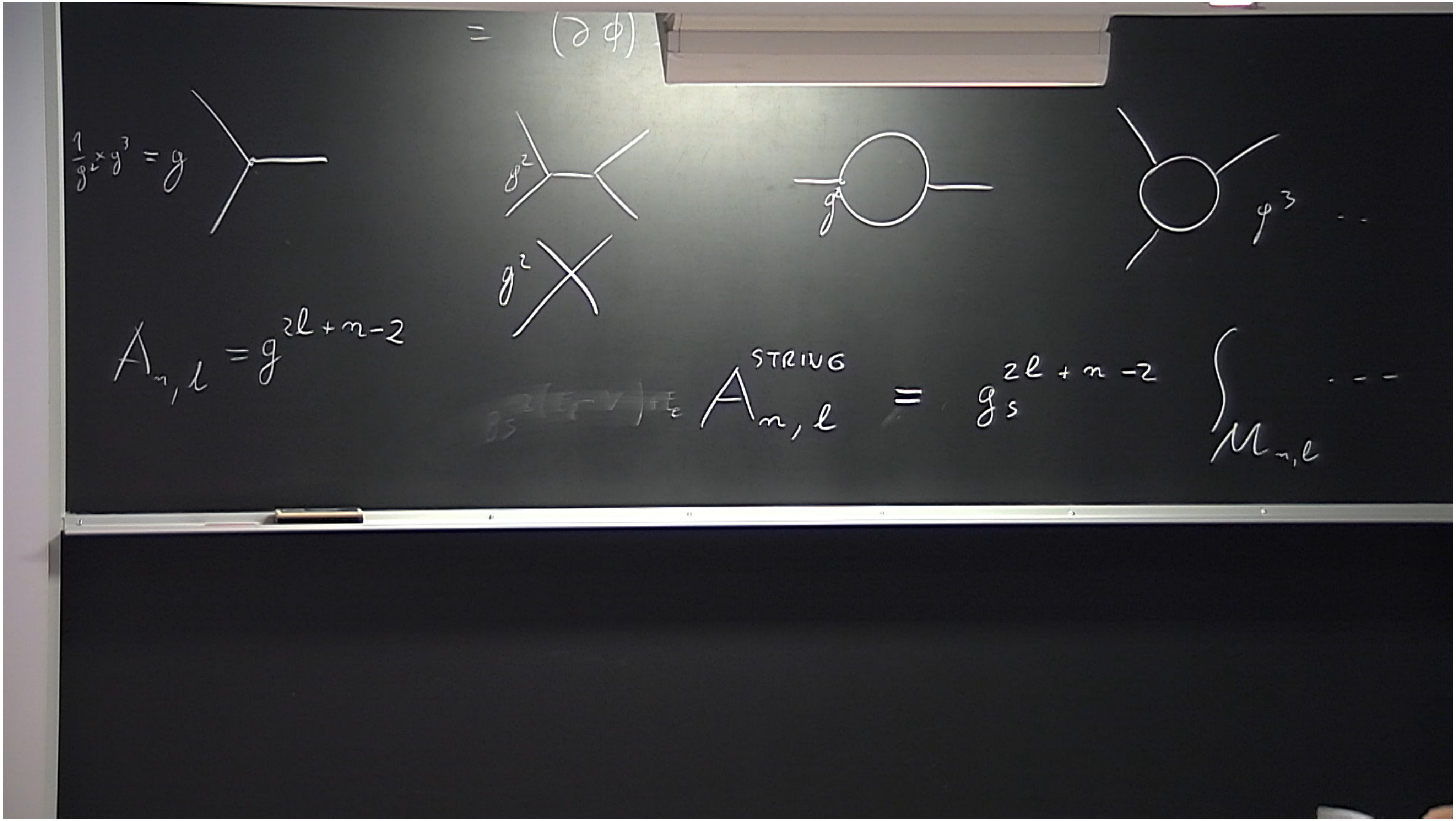
$$\frac{1}{g^2} S_{QFT} = \frac{1}{g^2}\left((\partial\phi)^2 + \phi^2 + \phi^3 + \phi^4 \dots \right)$$

$$= (\partial\tilde{\phi})^2 + \tilde{\phi}^2 + g\phi^3 + g^2\phi^4 \dots$$

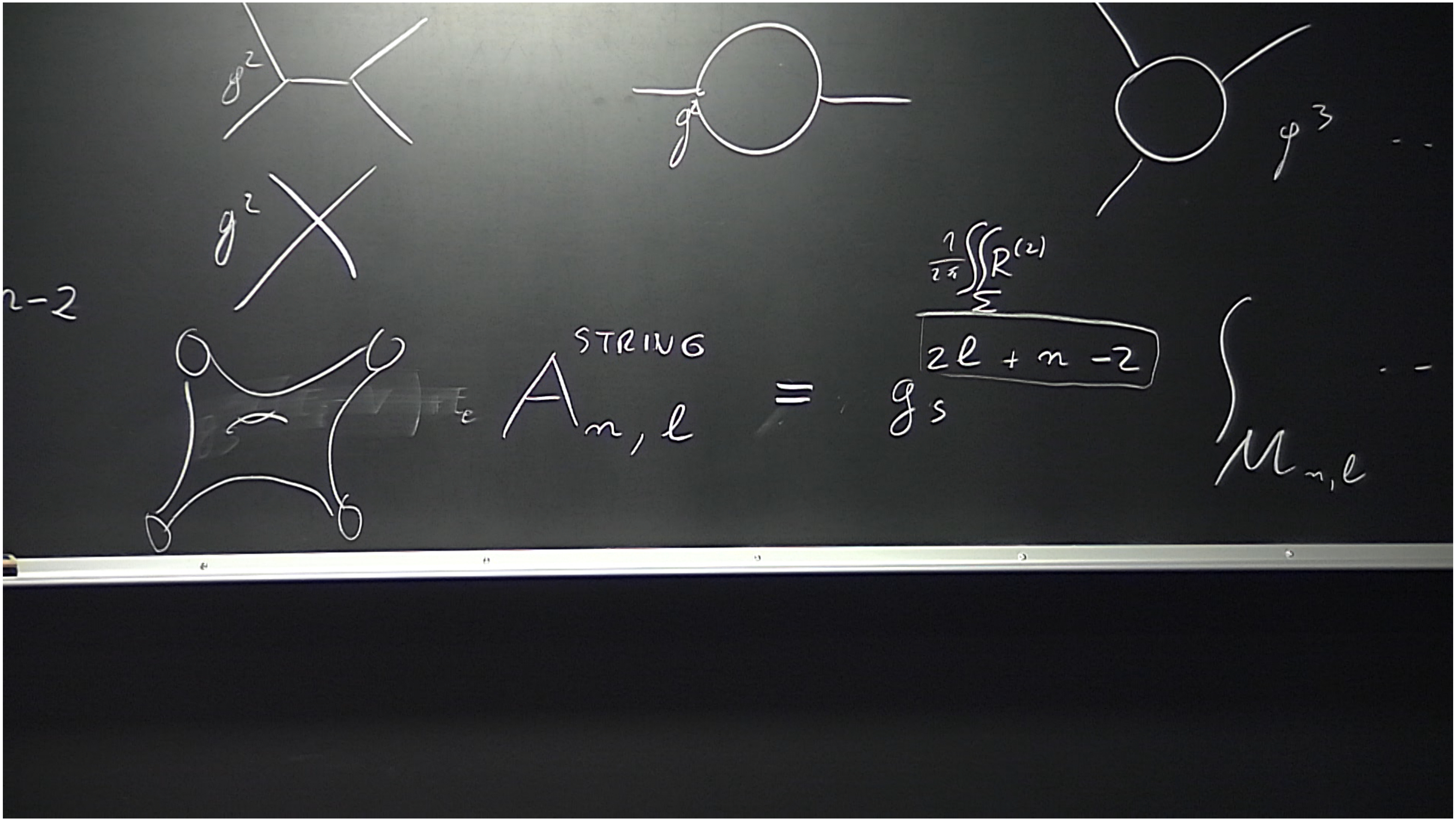


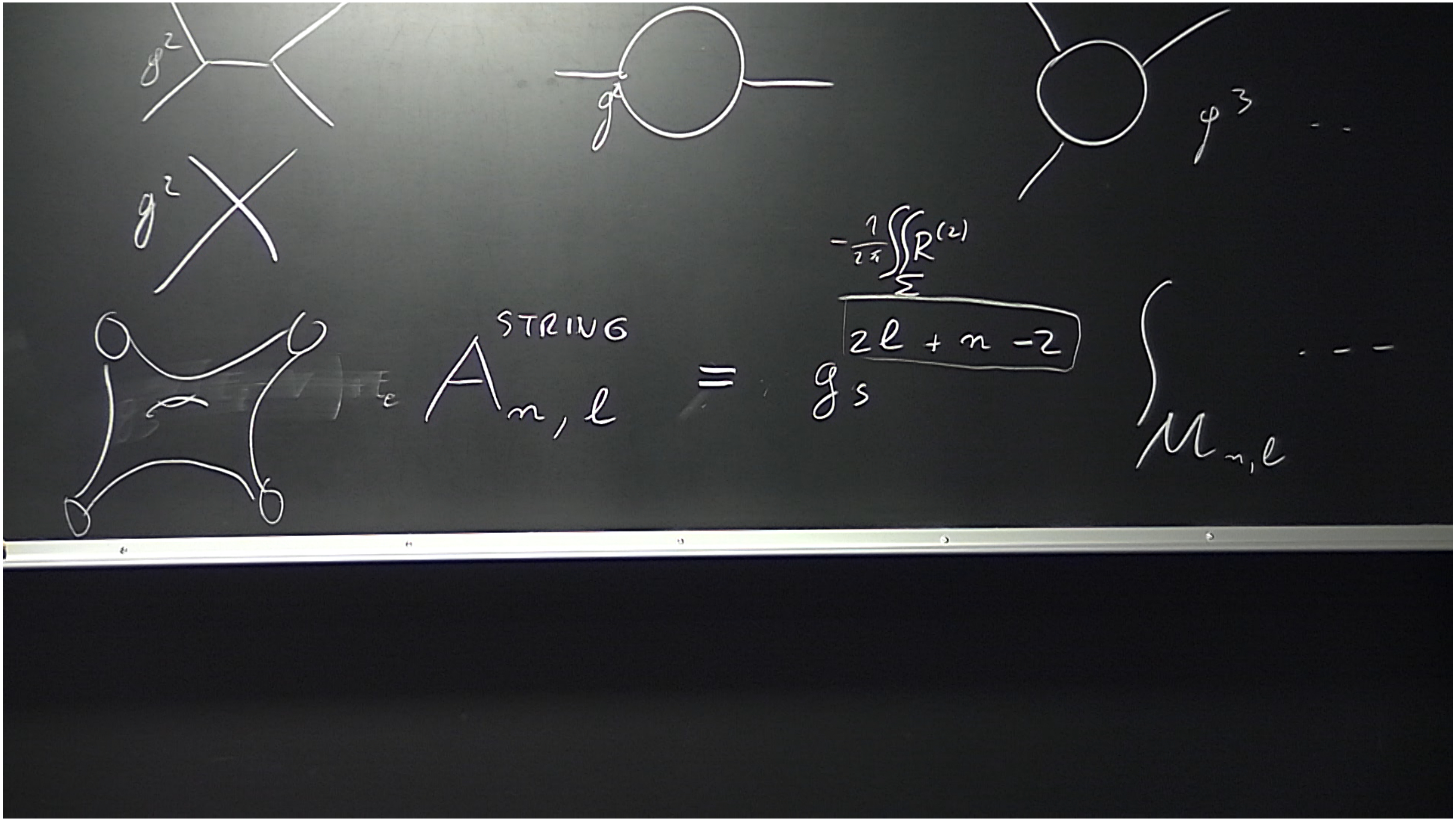
$$A_{n,l} = g^{2l+n-2}$$

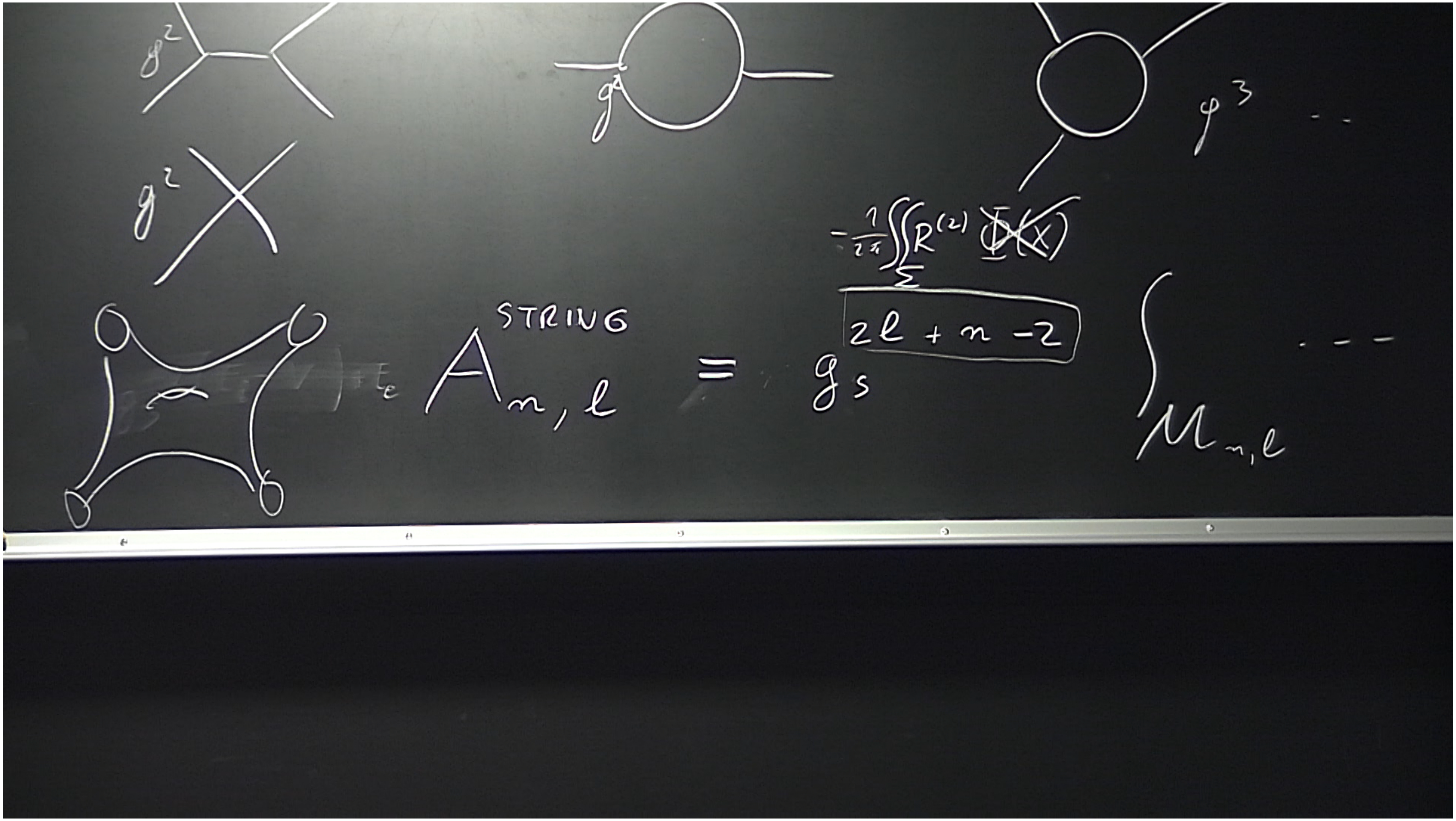
$$A^{STRING}_{n,l} = g_s^{2l+n-2} \int_{\mathcal{M}_{n,l}} \dots$$

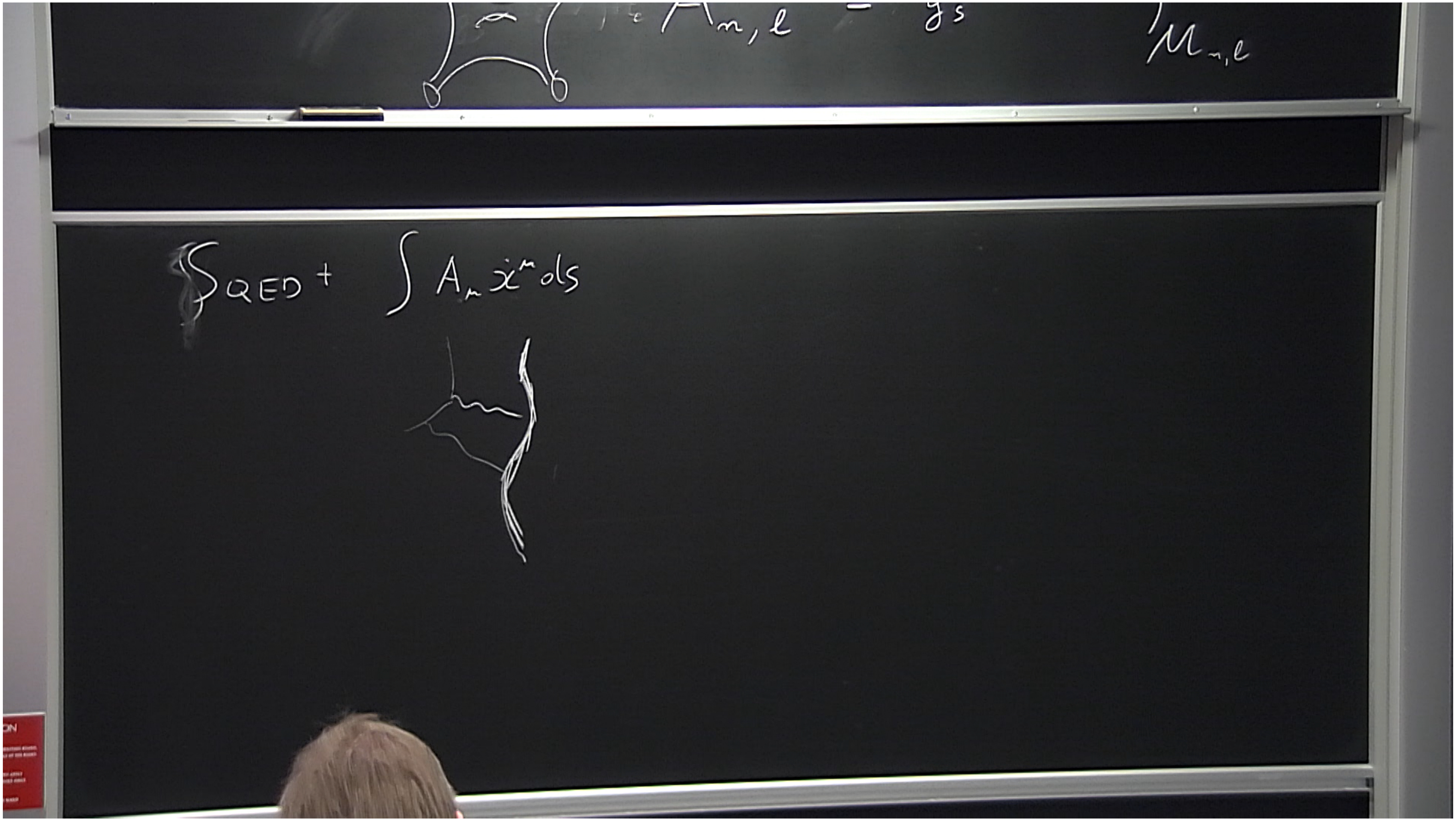


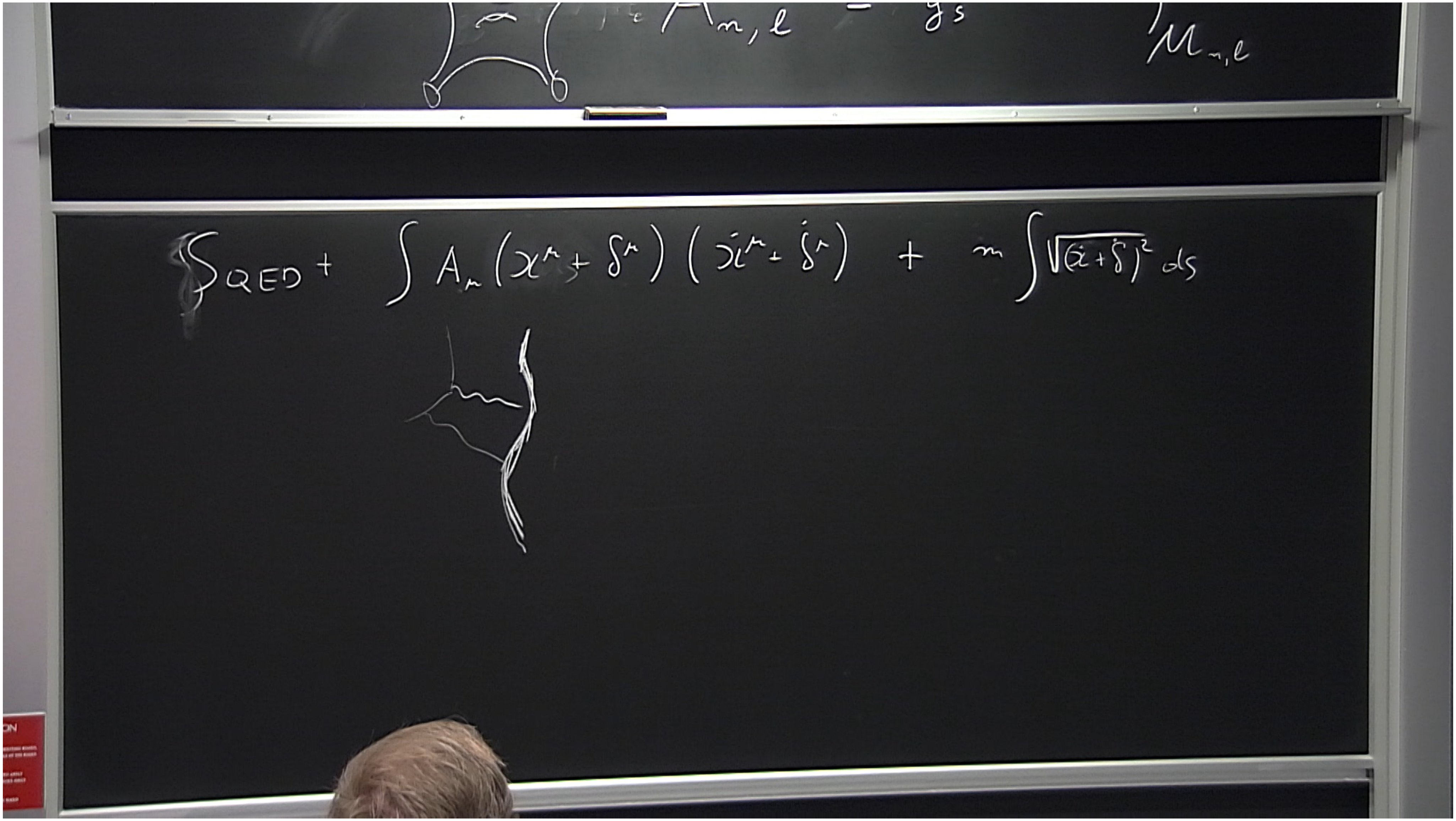
= (∂φ)
1/g² × φ³ = g
g²
g²
g
g³ . . .
A_{n,l} = g^{2l+n-2}
A^{STRING}_{n,l} = g_s^{2l+n-2} ∫_{M_{n,l}} . . .

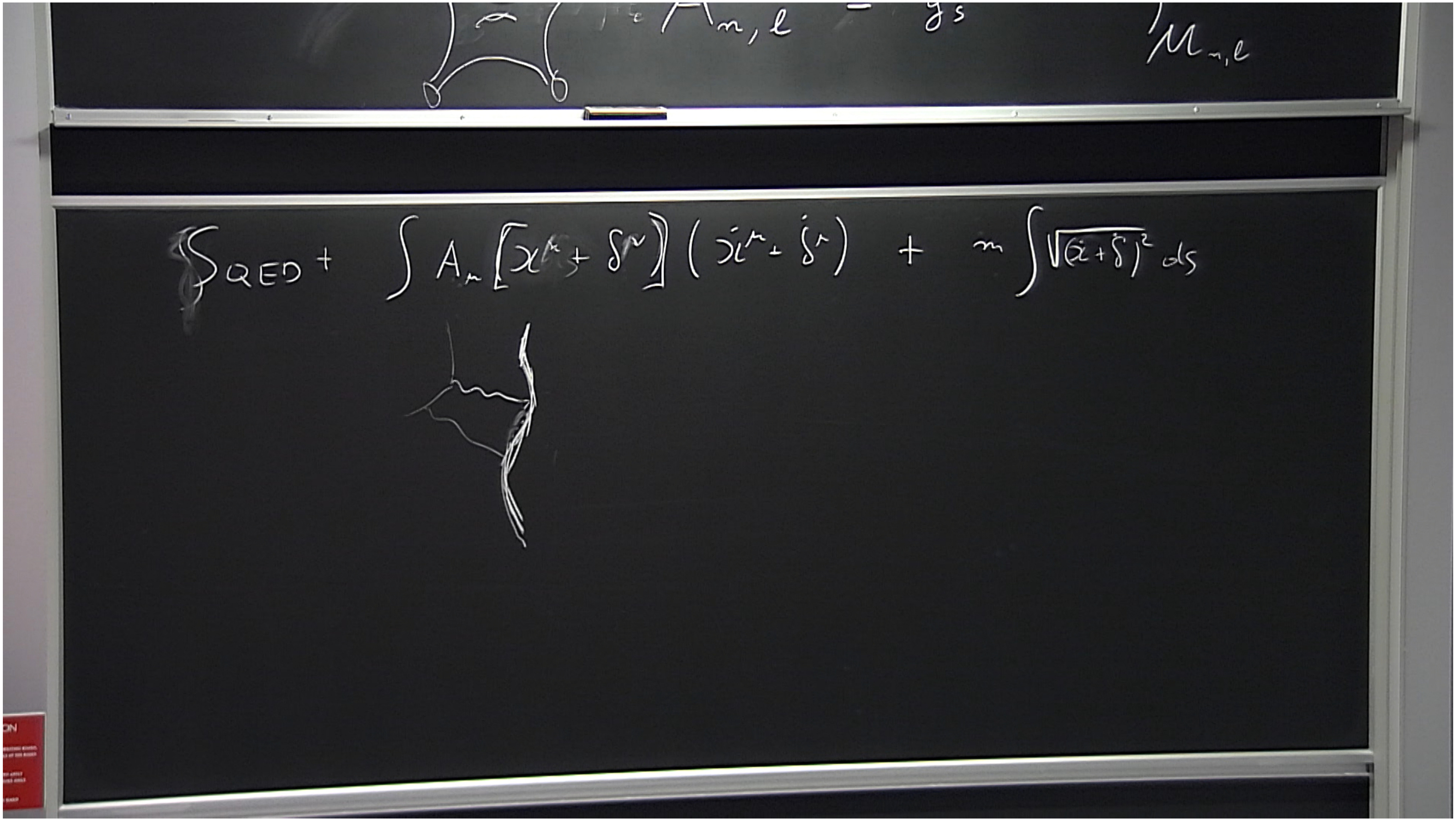

g²
g²
g²
φ³
n−2
STRING
A n,l = g_s 2l + n − 2
1/2π ∫∫_Σ R⁽²⁾
M n,l

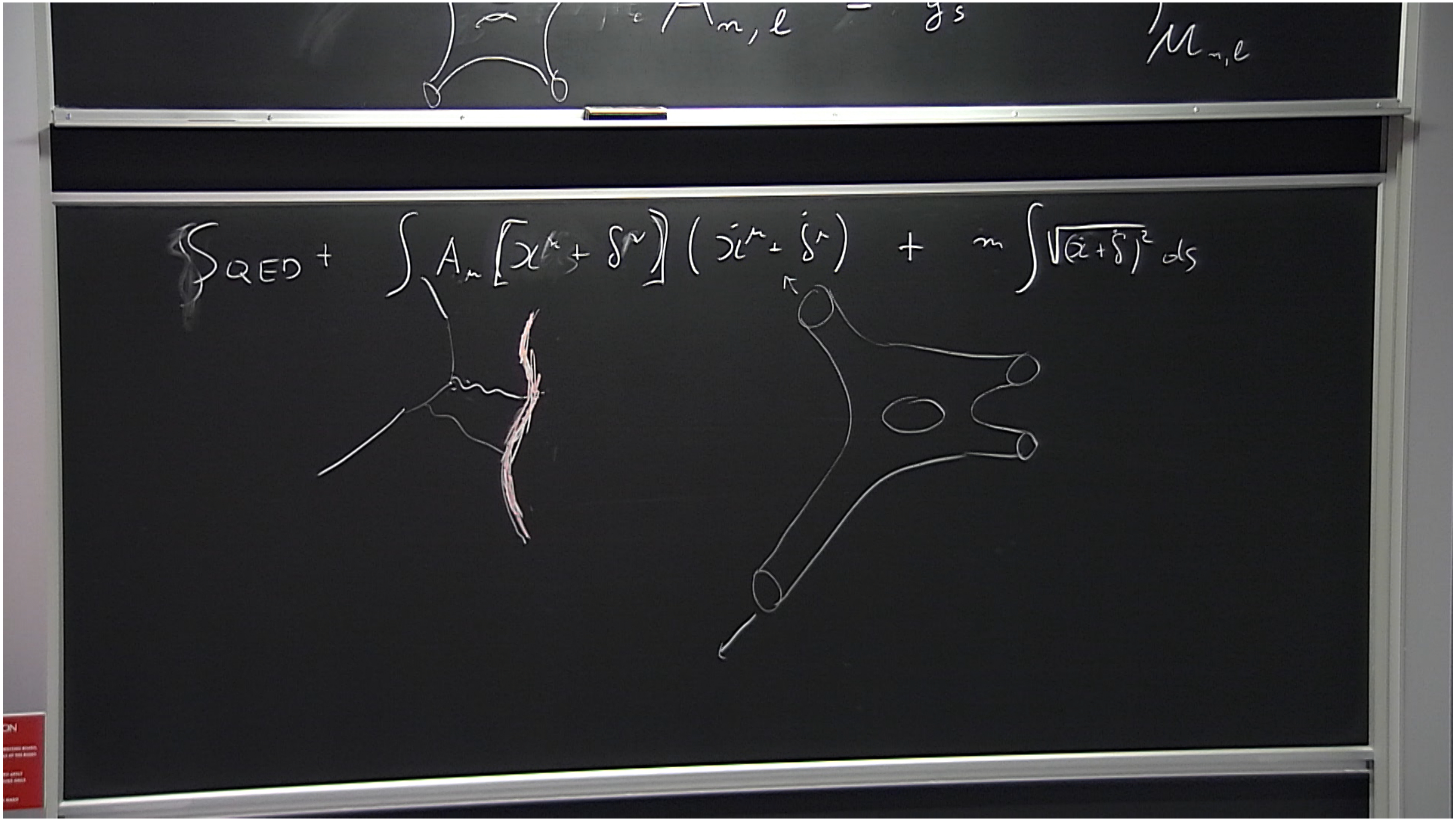

g^2
g^2
φ^3 . . .
STRING
A_{n,ℓ} = g_s^{2ℓ + n − 2} ∫_{M_{n,ℓ}} . . .
−1/2π ∫∫_Σ R^(2)

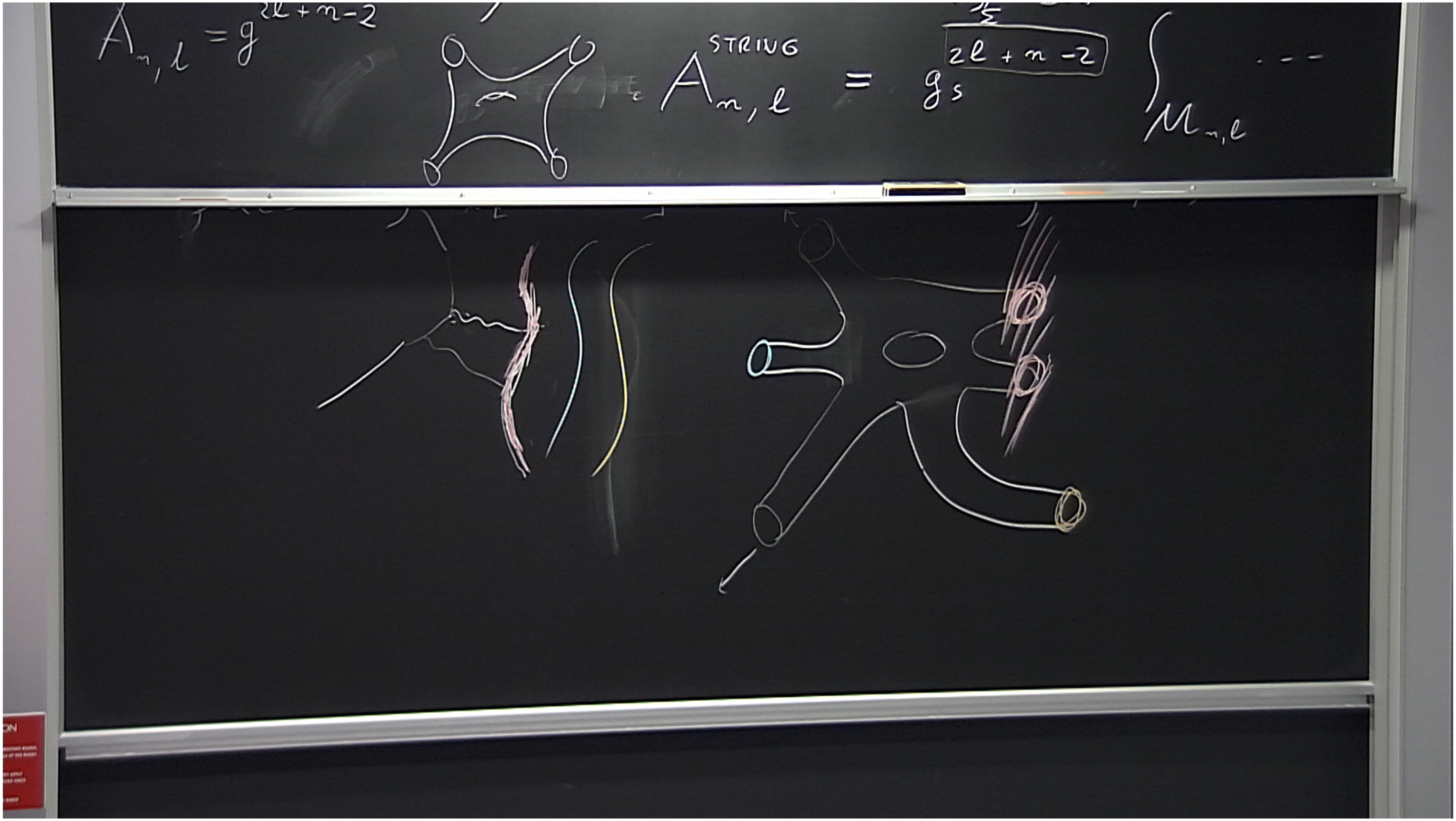

g^2
g^2
g^2
φ^3 ...
STRING
A_{n,ℓ} = g_s^{2ℓ+n-2}
-1/2π ∫∫_Σ R^(2) Φ(X)
∫_{M_{n,ℓ}} ...

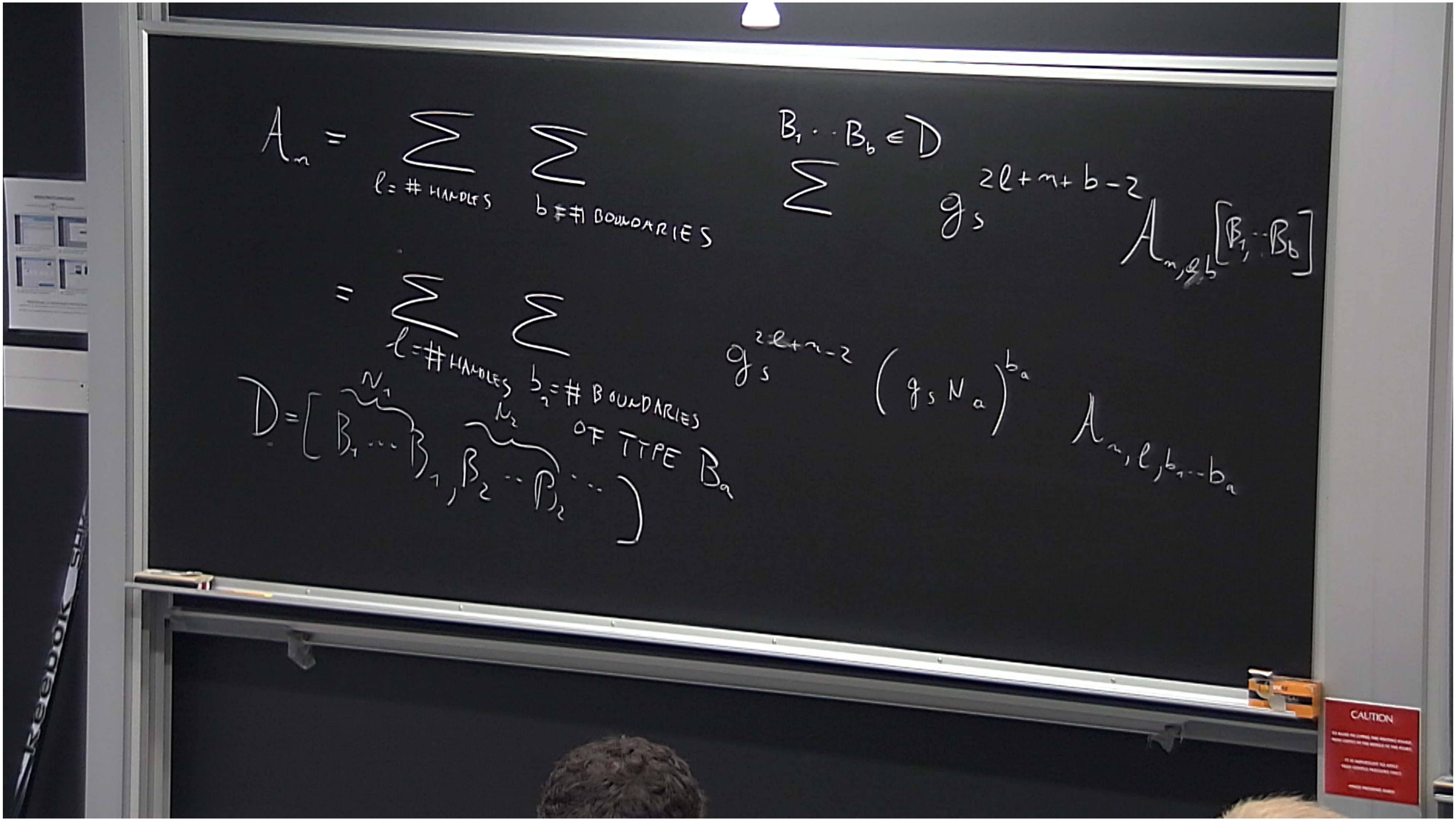

A_{n,l} = g_s
M_{n,l}
S_QED + ∫ A_μ ẋ^μ ds

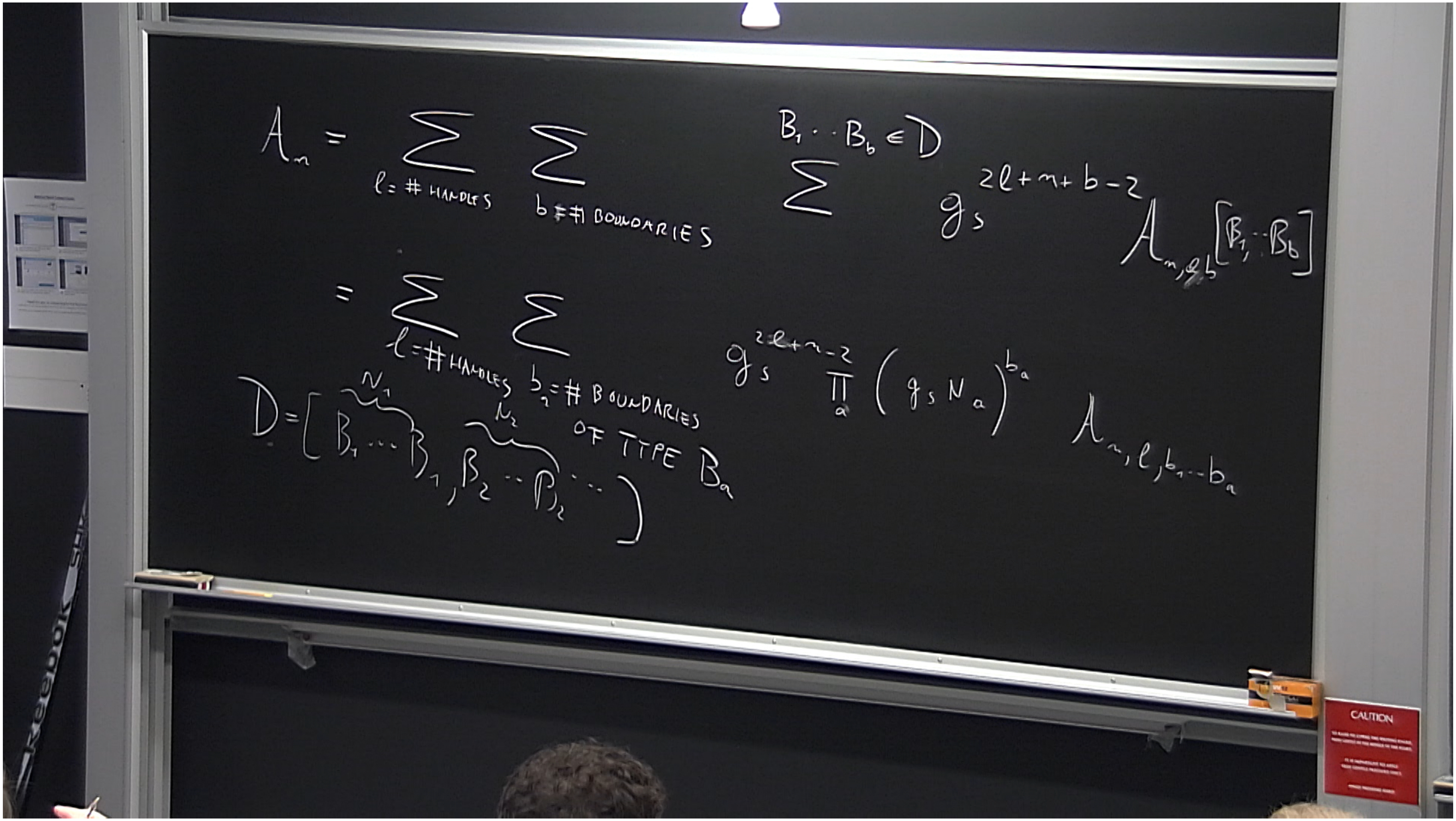

A_{n,l} = g_s
M_{n,l}
S_QED + ∫ A_μ (x^μ + δ^μ) (ẋ^μ + δ̇^μ) + m ∫ √((ẋ + δ̇)²) ds

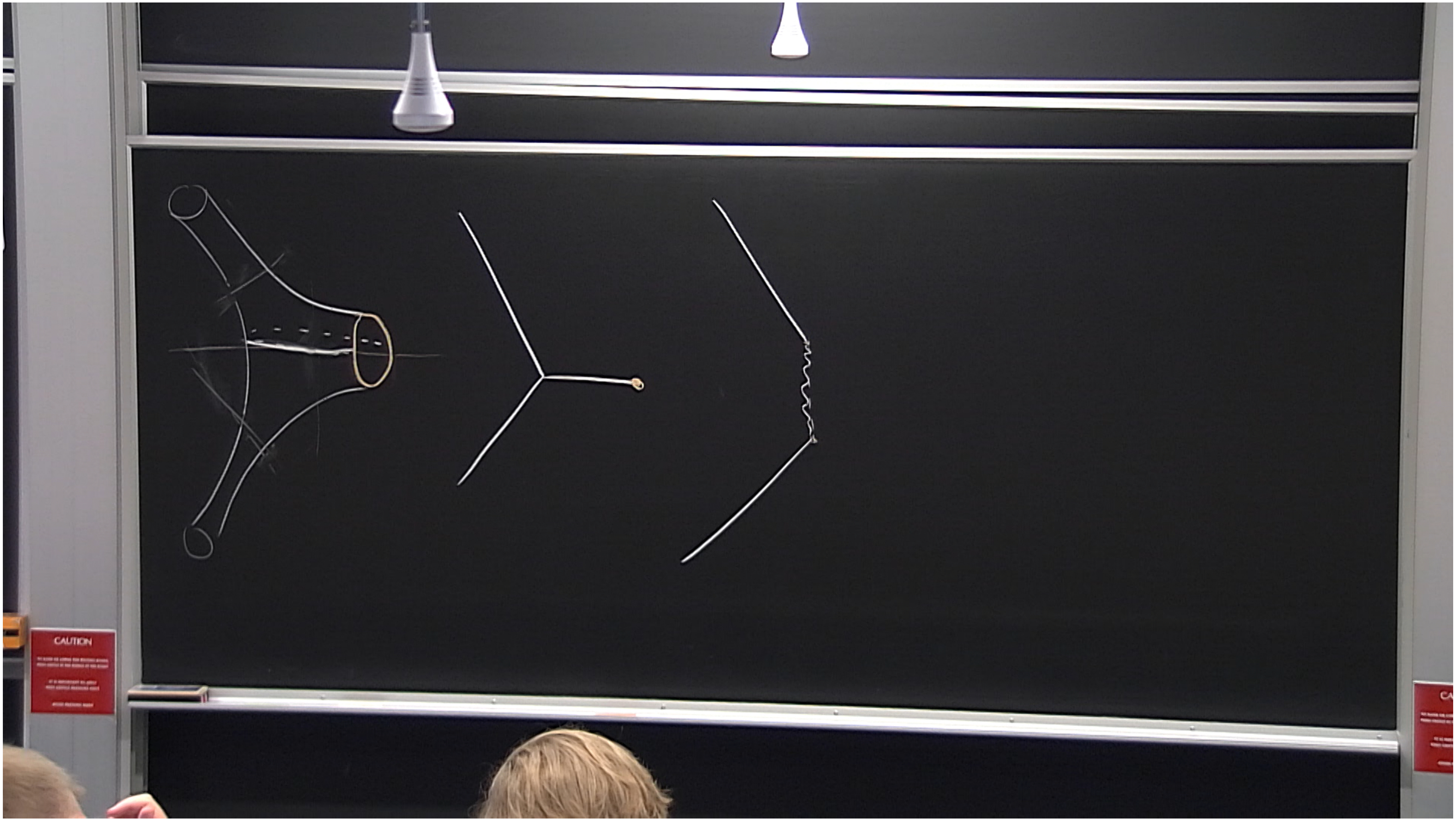

S QED + ∫ Aμ [xμ + δμ] (ẋμ + δ̇μ) + m ∫ √(ẋ + δ̇)² ds

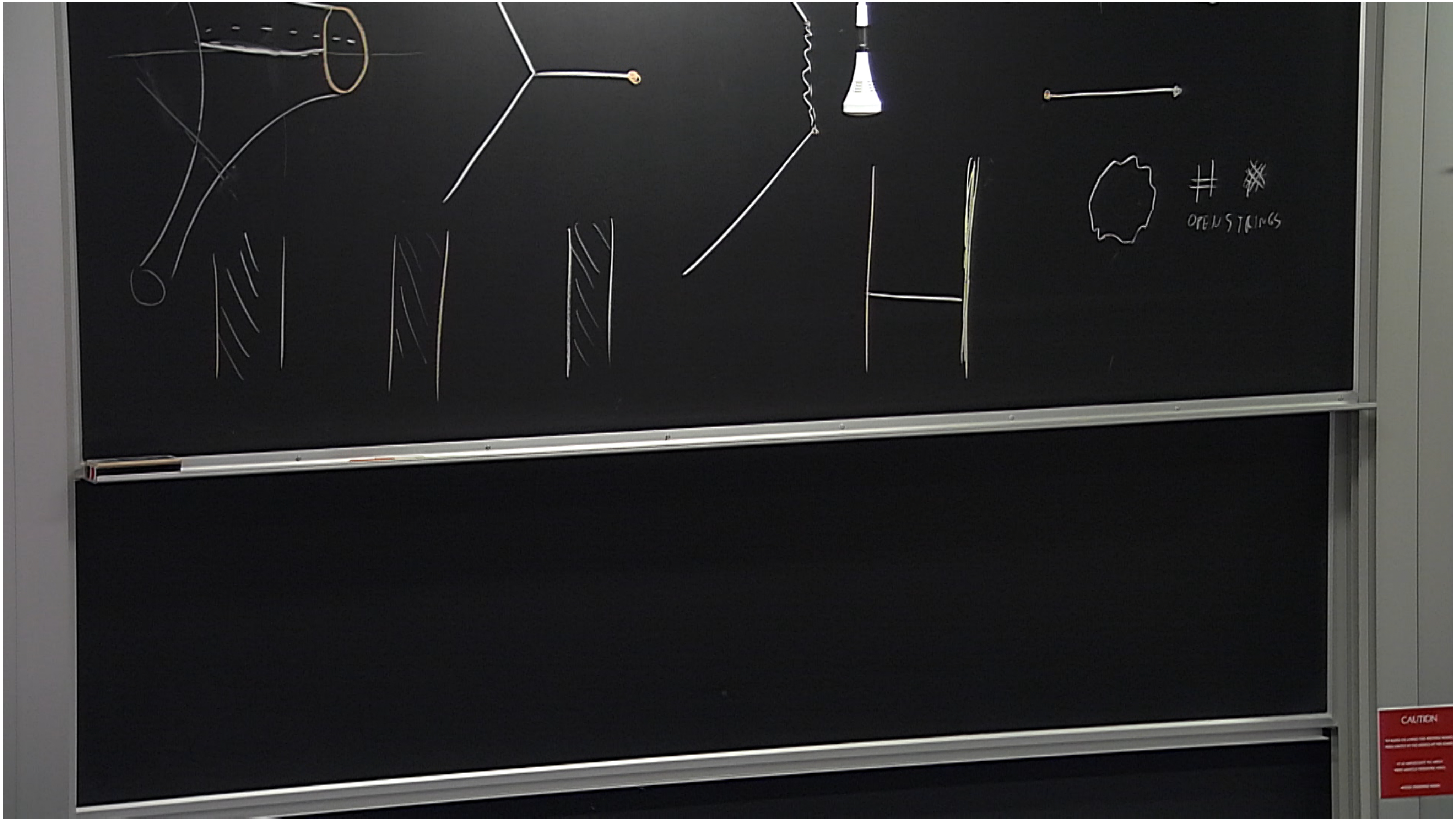

S_QED + ∫ A_μ[x^μ + δ^μ] (ẋ^μ + δ̇^μ) + m ∫ √(ẋ + δ̇)² ds

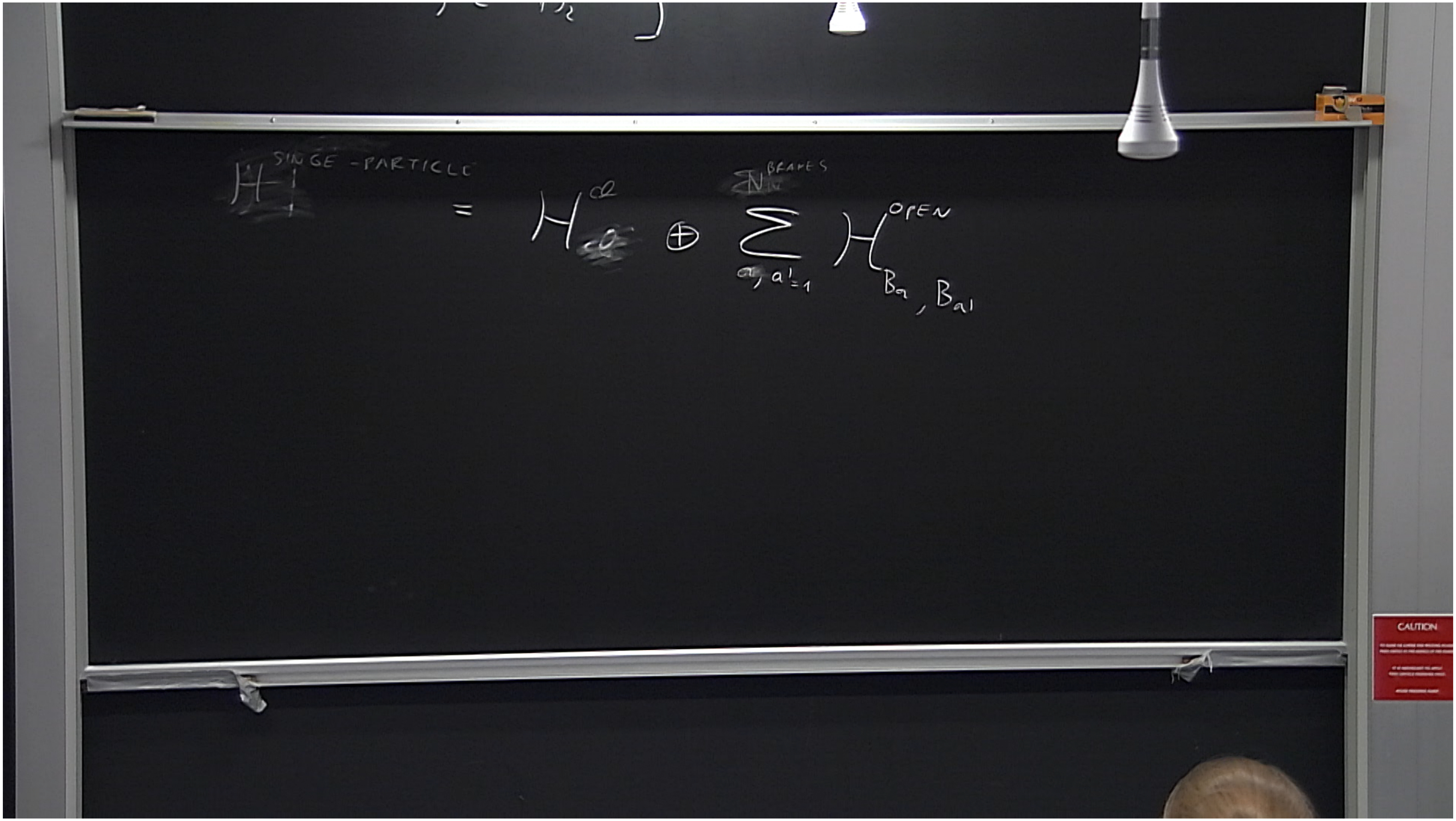

$A_{n,l} = g^{2l+n-2}$
STRING
$A_{n,l} = g_s^{2l+n-2} \int_{\mathcal{M}_{n,l}} \cdots$

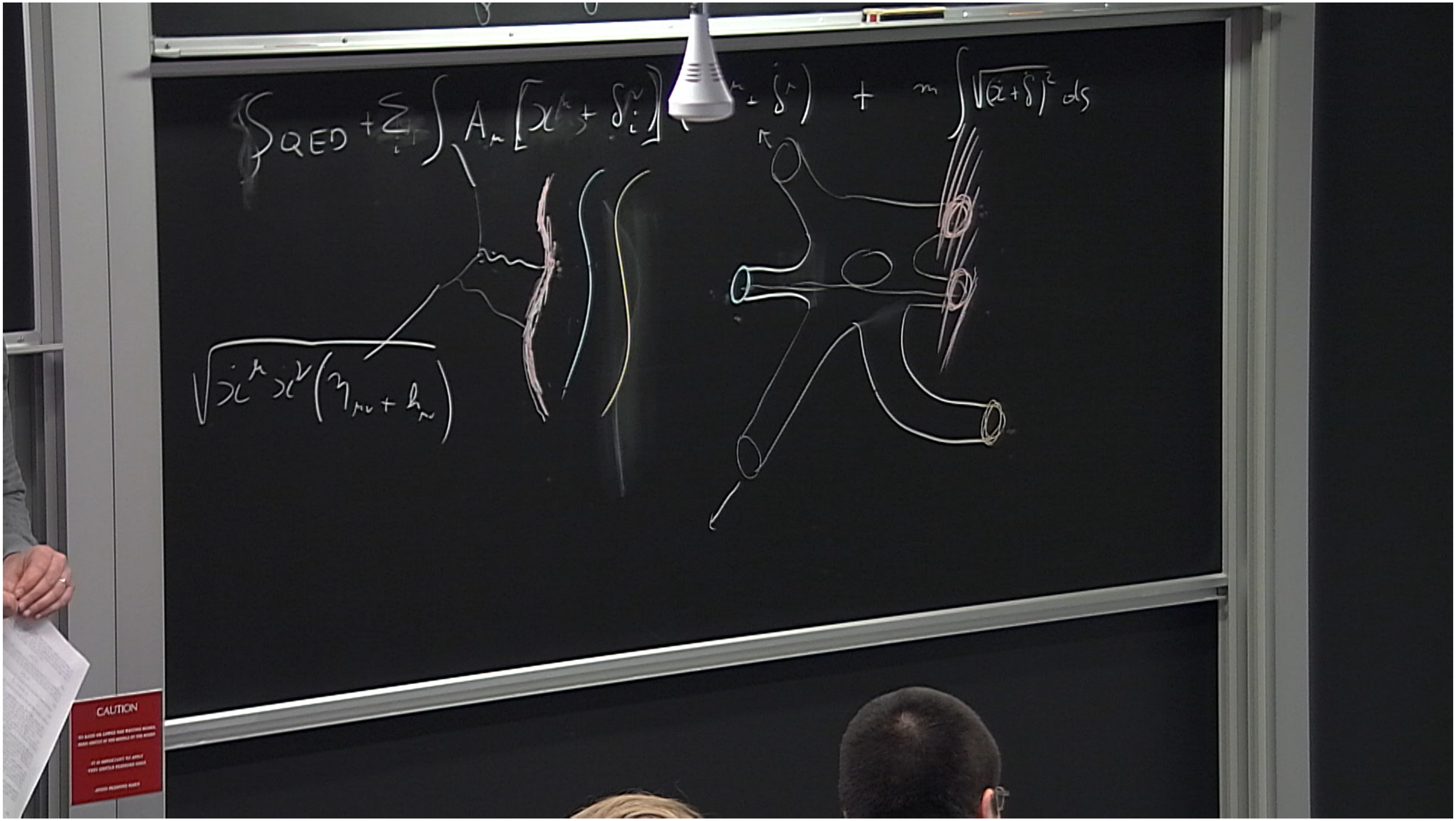

A_n = Σ Σ Σ g_s^(2l+n+b-2) A_{n,l,b}[B_1 .. B_b]
l = # HANDLES
b = # BOUNDARIES
B_1 .. B_b ∈ D
= Σ Σ g_s^(2l+n-2) (g_s N_a)^(b_a) A_{n,l,b_1..b_a}
l = # HANDLES
b_a = # BOUNDARIES OF TYPE B_a
D = [B_1 ... B_1, B_2 .. B_2 ...]
N_1
N_2

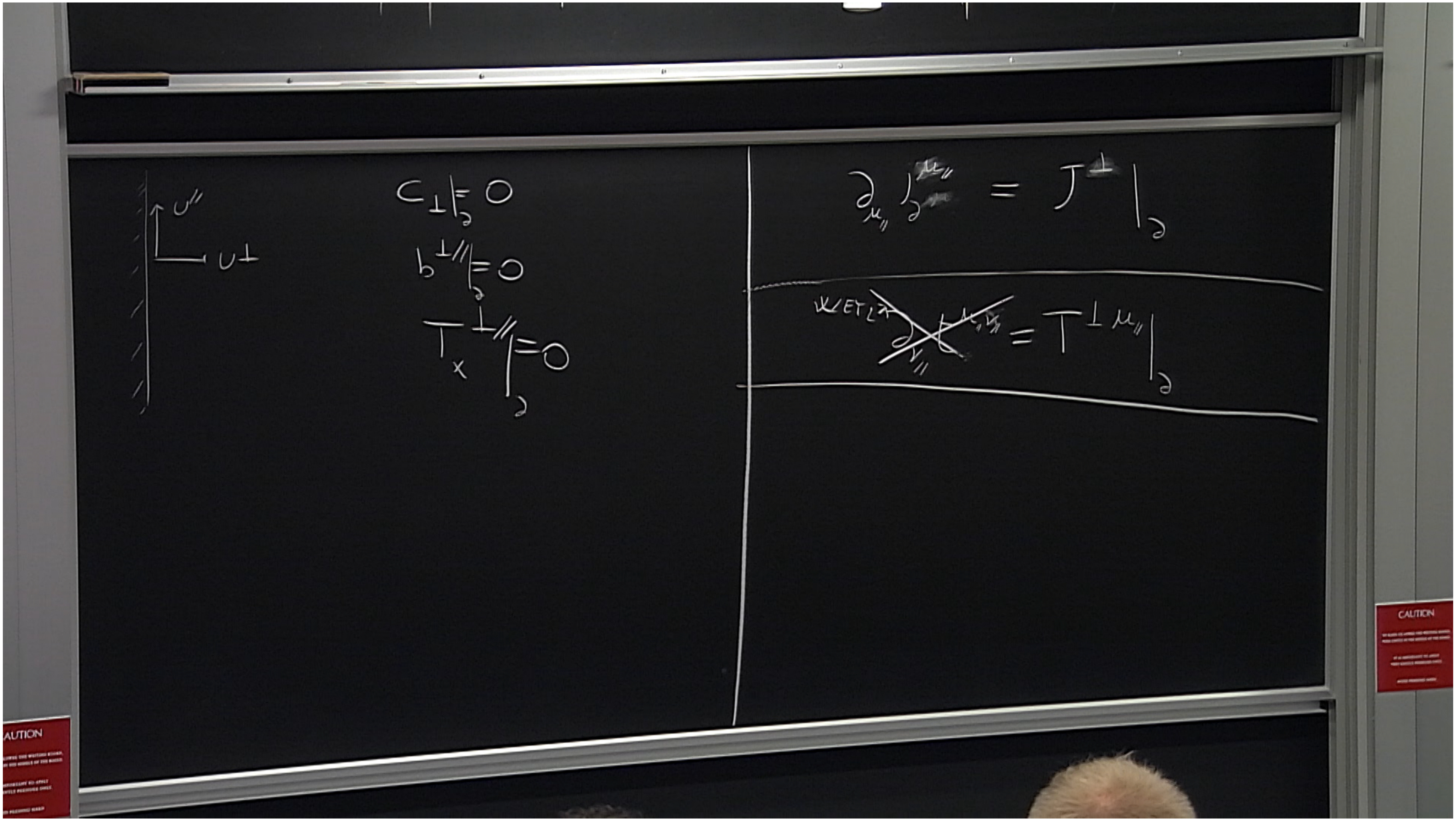

$A_n = \sum_{\ell = \#\text{ HANDLES}} \sum_{b = \#\text{ BOUNDARIES}} \sum^{B_1 \cdots B_b \in D} g_s^{2\ell+n+b-2} A_{n,\ell,b}[B_1 \cdots B_b]$
$= \sum_{\ell = \#\text{ HANDLES}} \sum_{b_a = \#\text{ BOUNDARIES OF TYPE } B_a} g_s^{2\ell+n-2} \prod_a (g_s N_a)^{b_a} A_{n,\ell,b_1 \cdots b_a}$
$D = [\overbrace{B_1 \cdots B_1}^{N_1}, \overbrace{B_2 \cdots B_2}^{N_2} \cdots]$
CAUTION

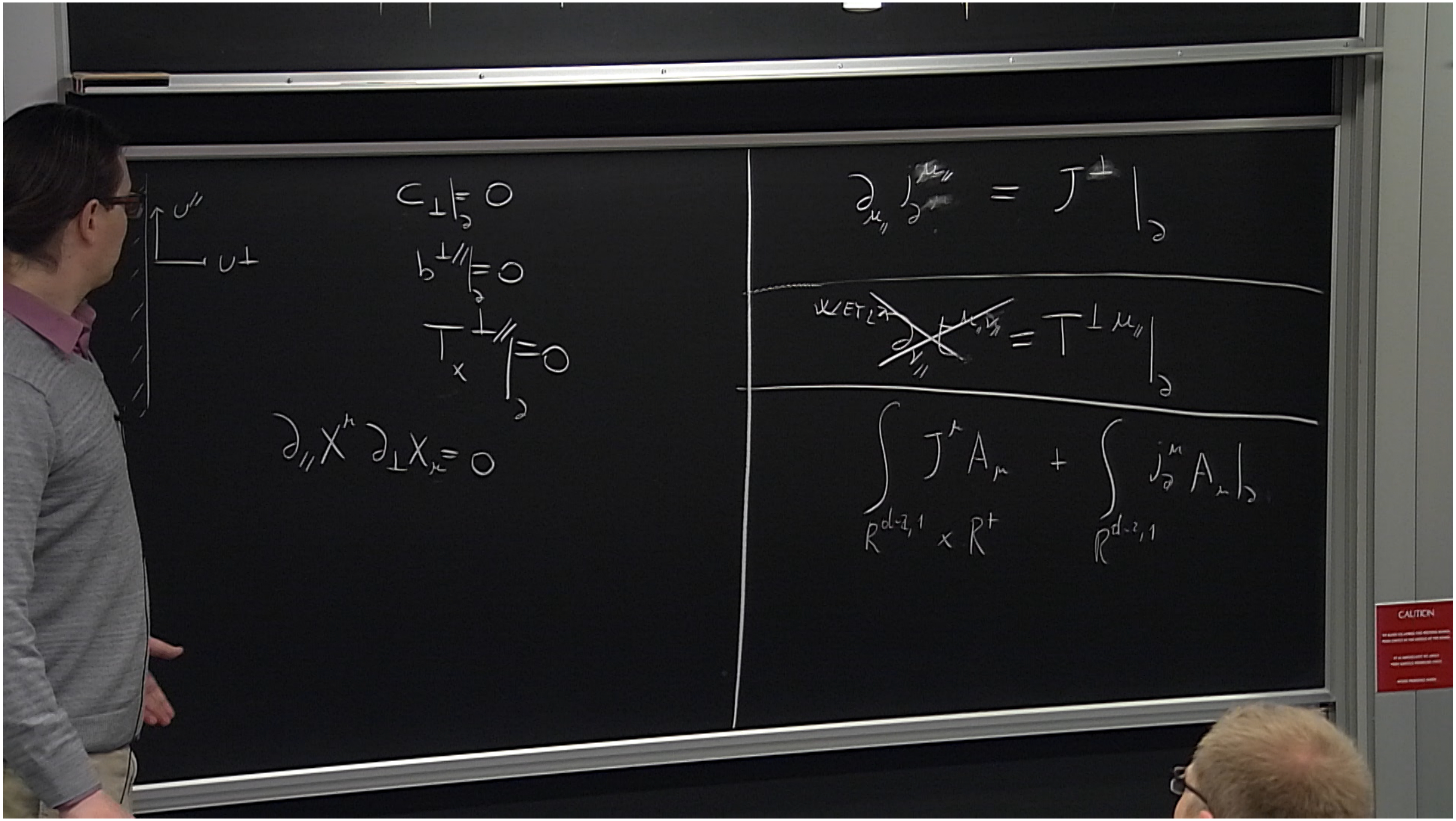

CAUTION


OPEN STRINGS


BRANES
OPEN
CAUTION




CAUTION


c⊥|∂ = 0
b⊥//|∂ = 0
T⊥//x|∂ = 0
∂//X^μ ∂⊥X_μ = 0
∂μ// j∂^μ// = J⊥|∂
= T⊥μ//|∂
∫ J^μ A_μ + ∫ j∂^μ A_μ|∂
R^{d-2,1} × R^+
R^{d-2,1}
CAUTION