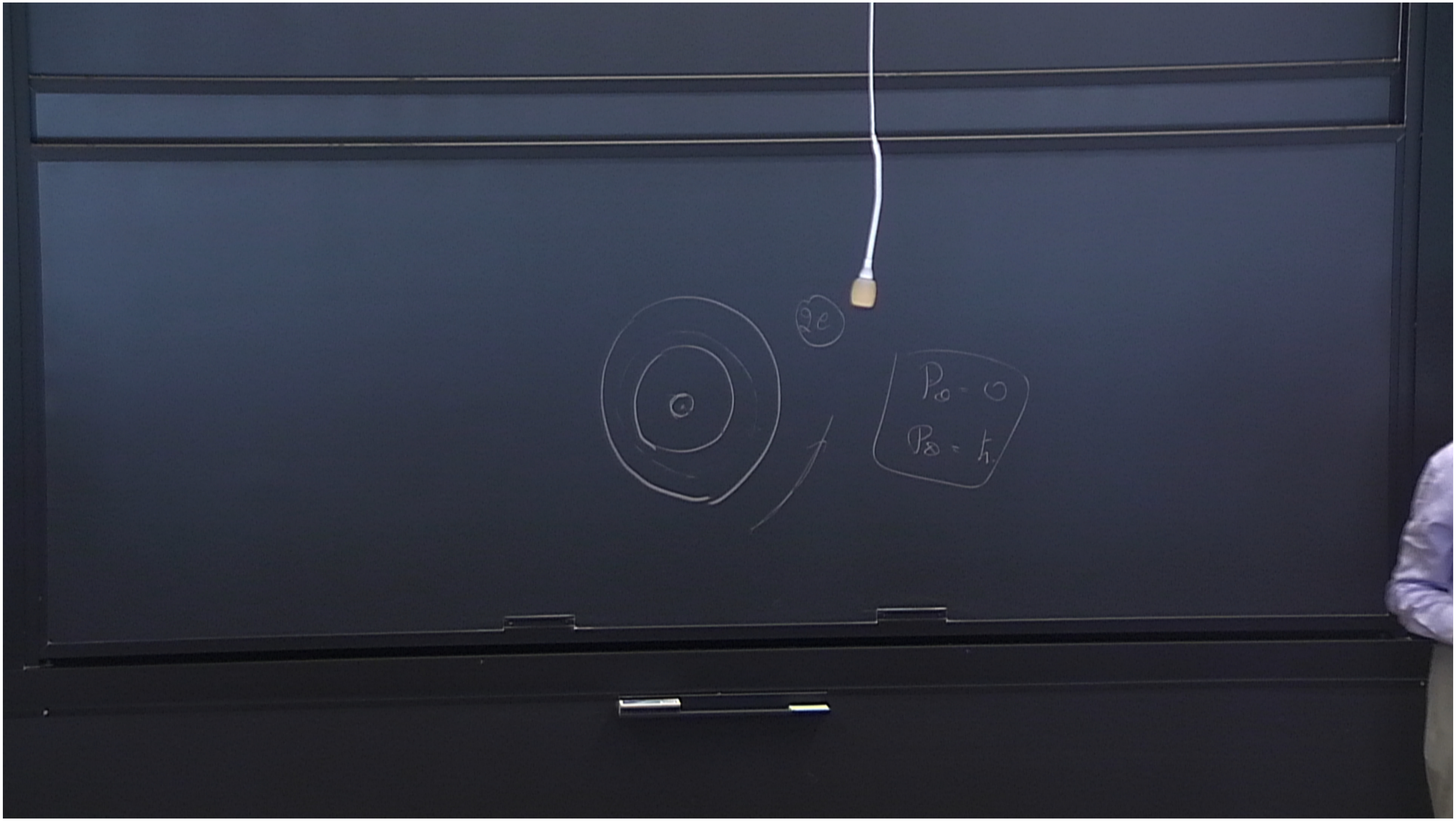
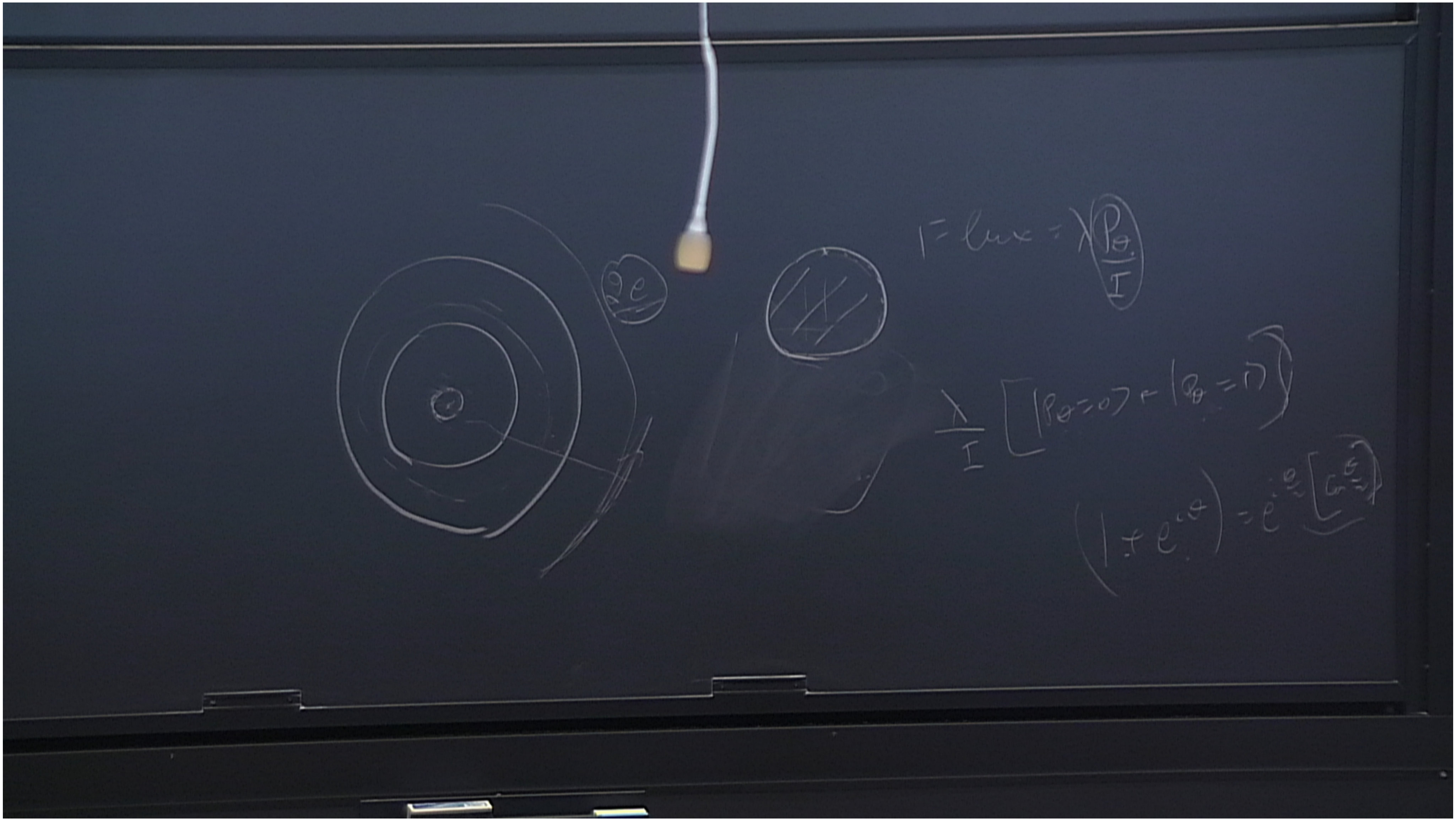
Title: TBA

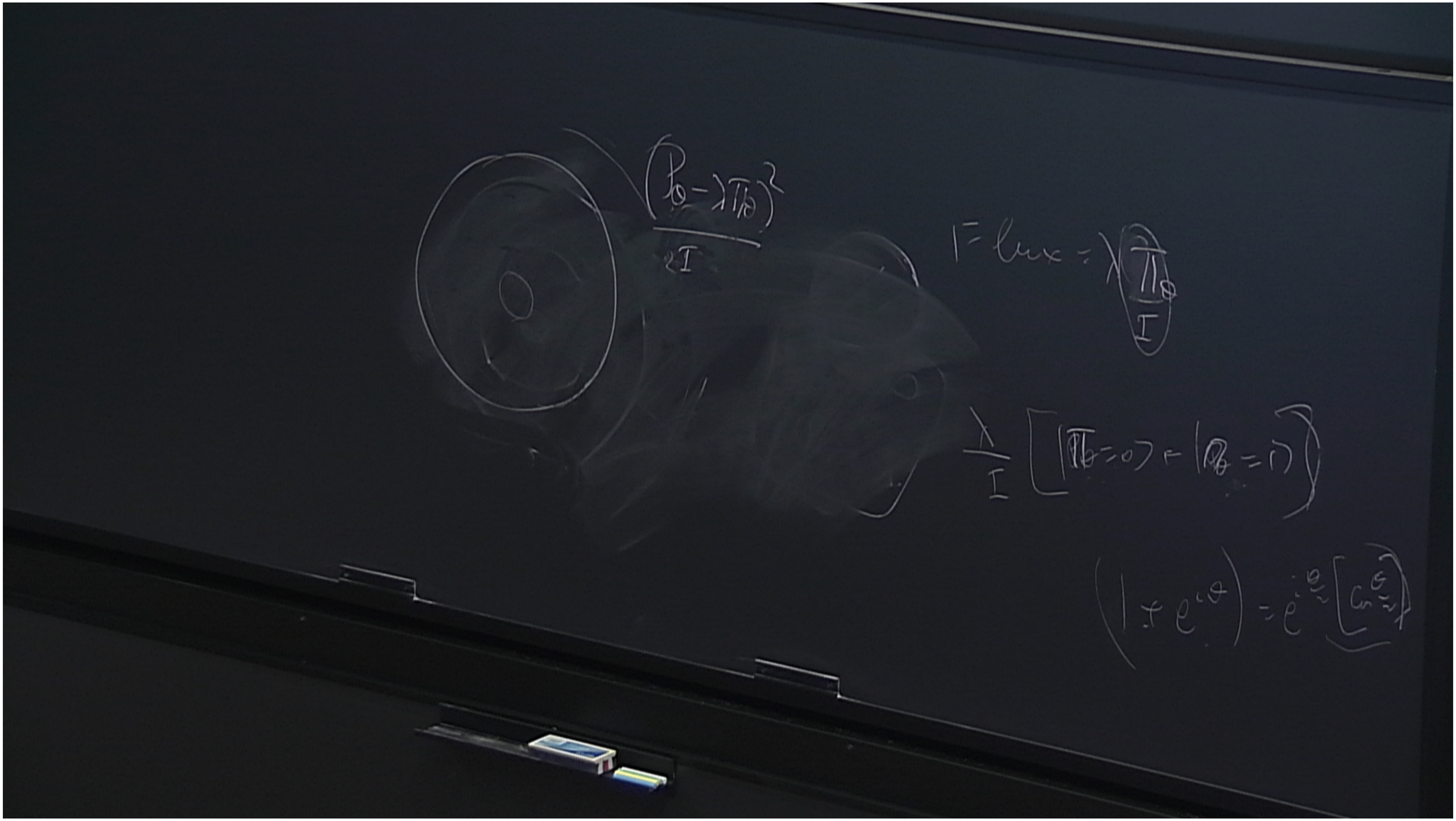
Date: Jun 14, 2016 09:30 AM

URL: http://pirsa.org/16060085

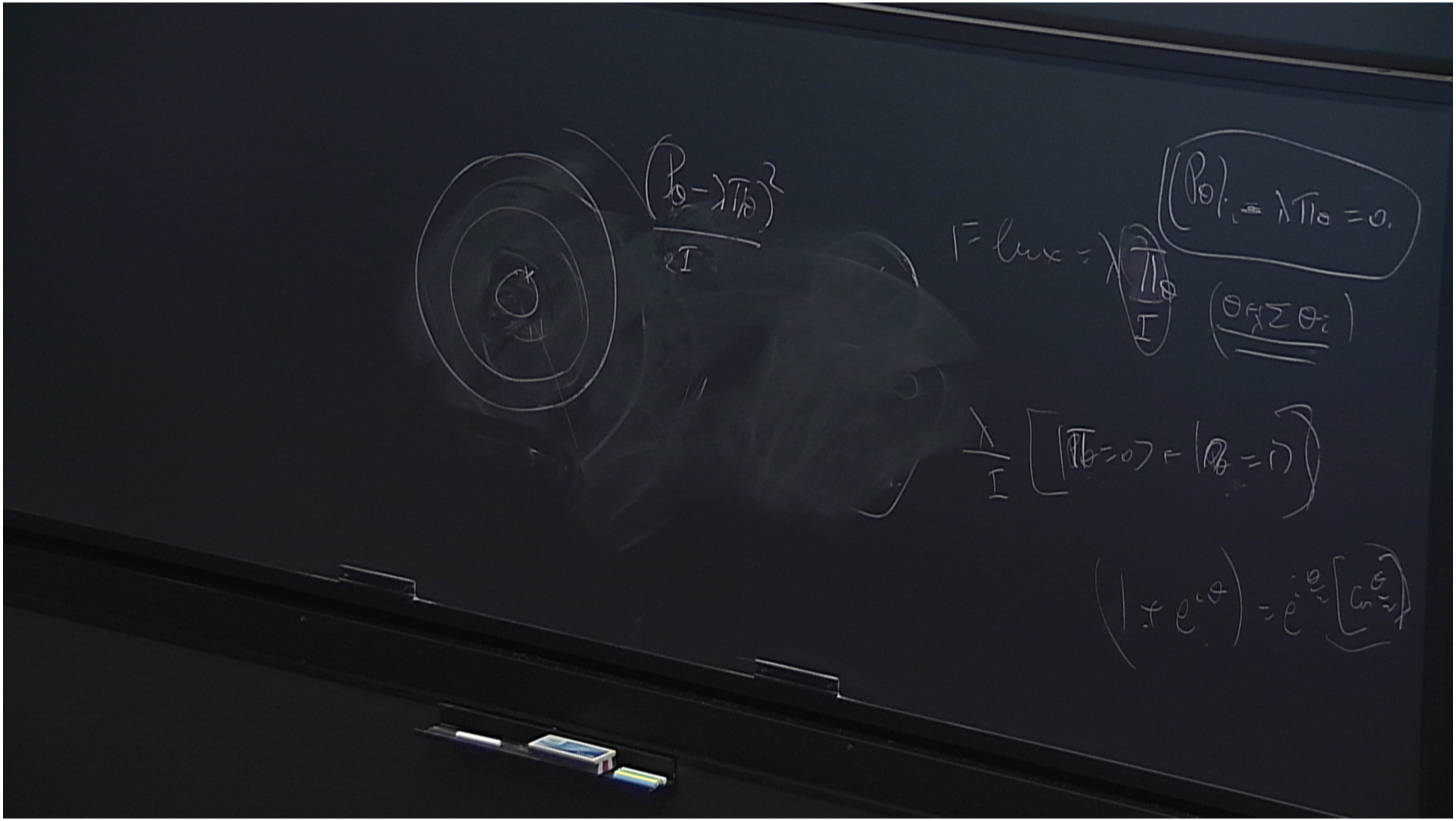
Abstract:

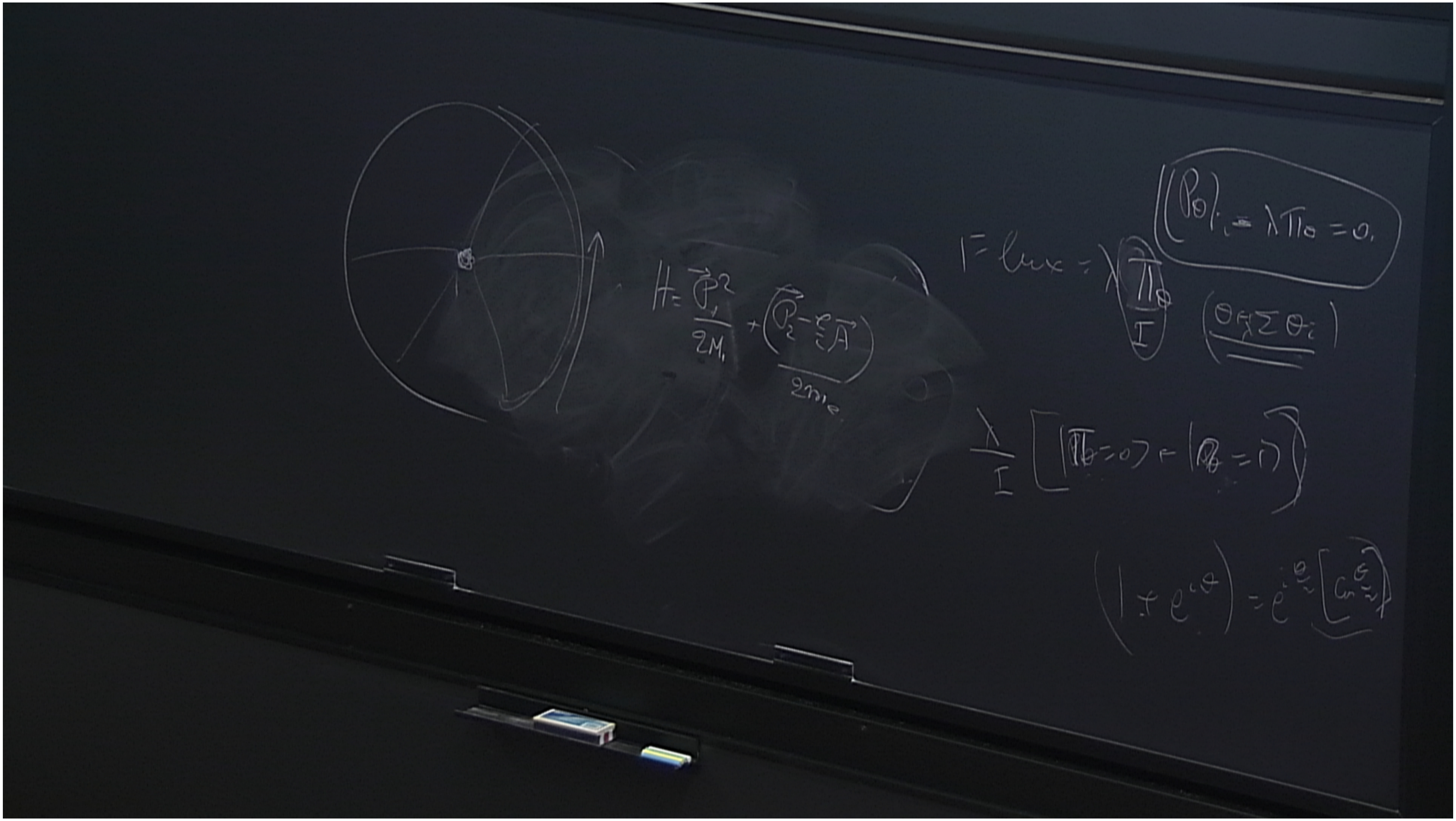


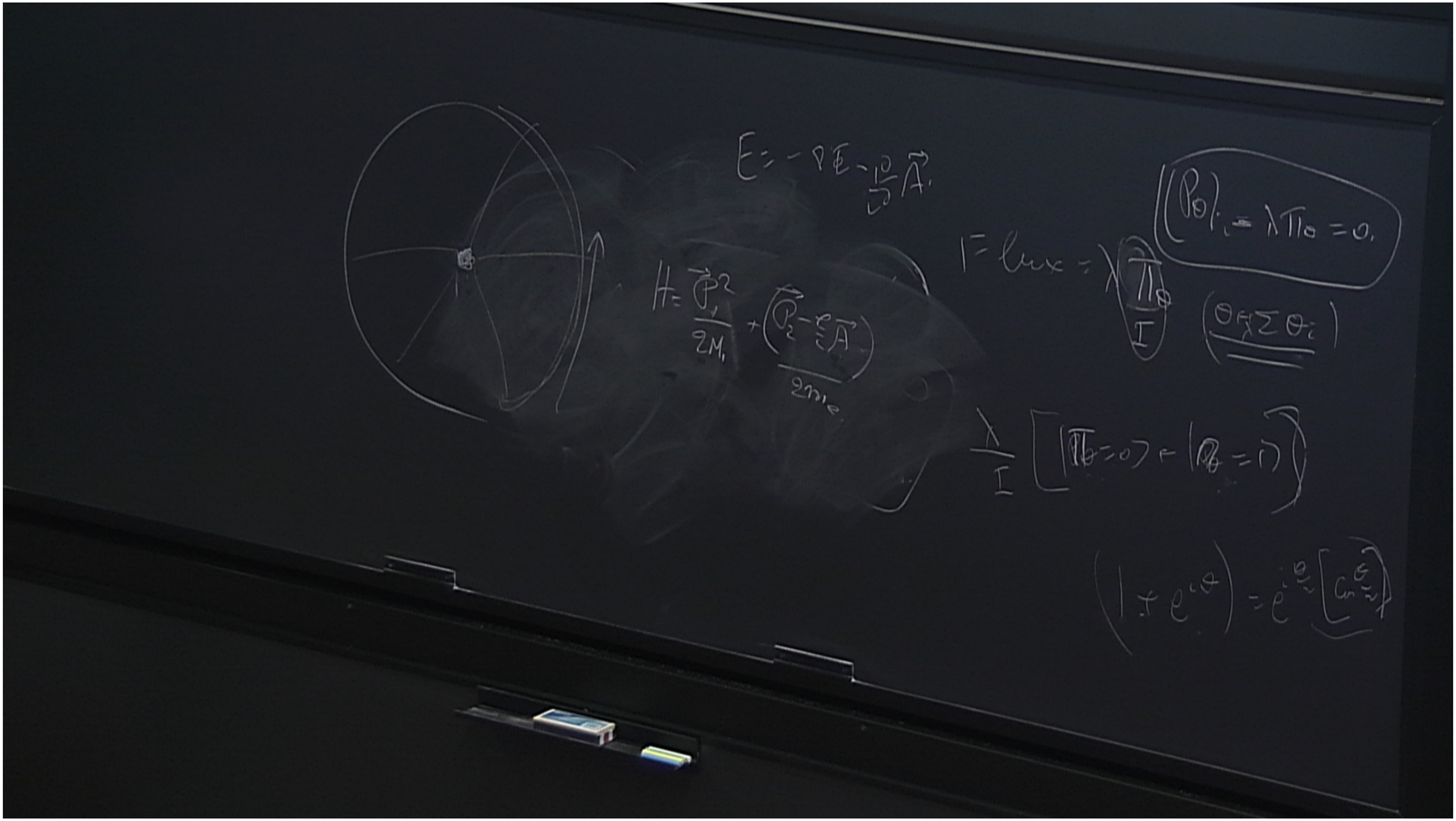

Flux = λ Pθ / I

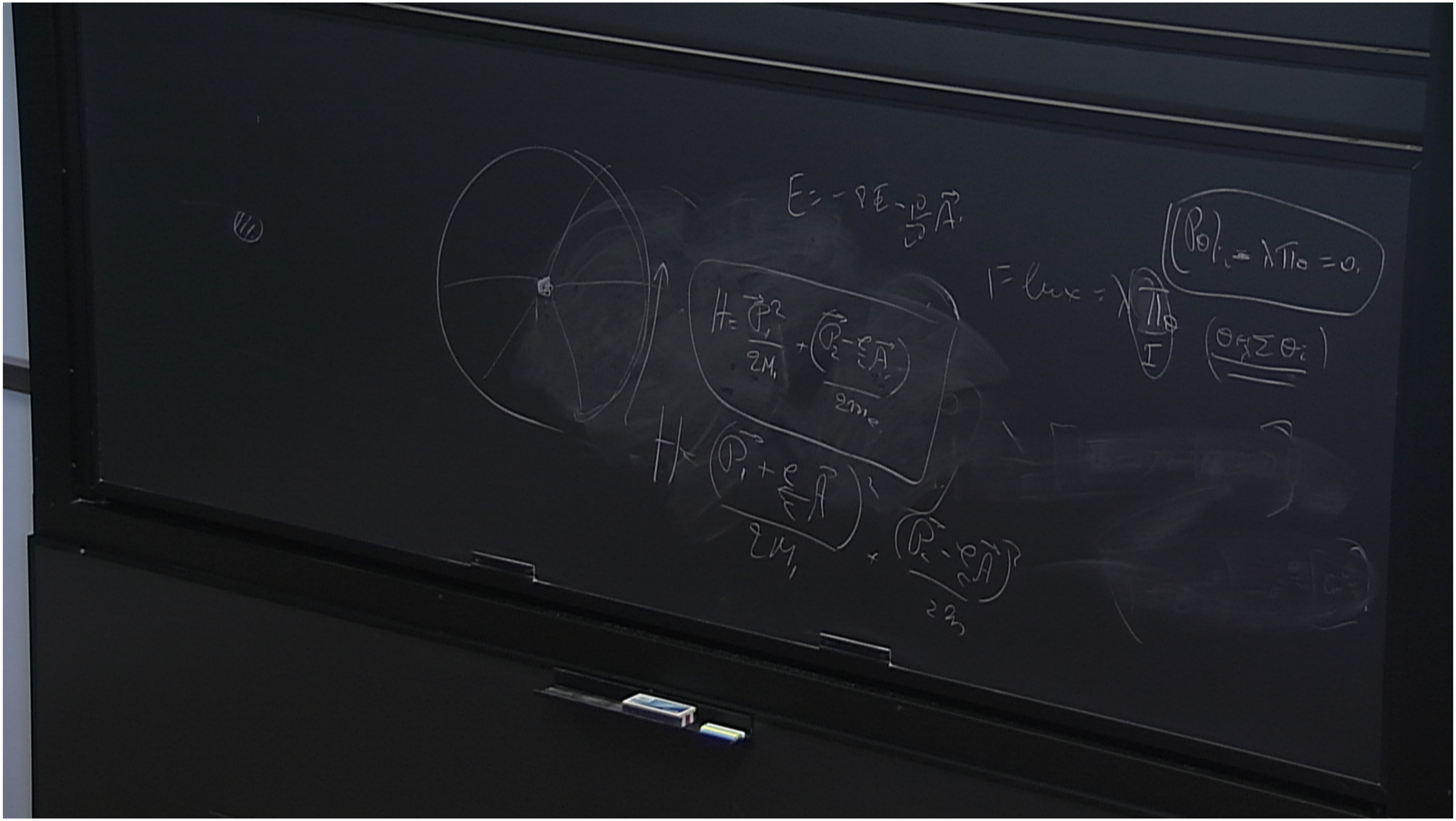


$\frac{(P_\theta - \lambda\Pi_\theta)^2}{2I}$
Flux $= \lambda \frac{\Pi_\theta}{I}$
$\frac{\lambda}{I}\left[|P_\theta=0\rangle + |P_\theta=1\rangle\right]$
$(1+e^{i\theta}) = e^{i\frac{\theta}{2}}\left[\cos\frac{\theta}{2}\right]$





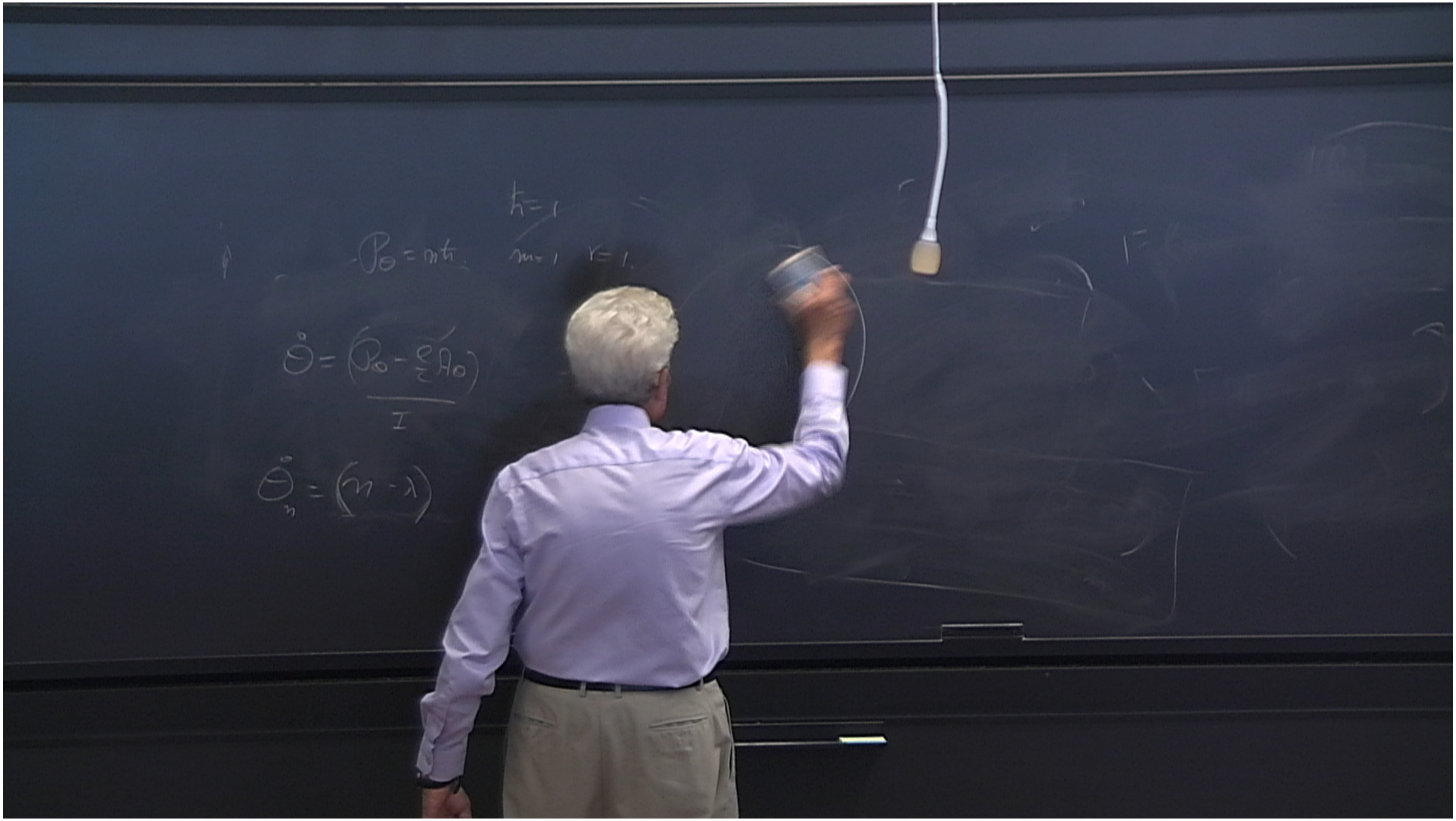

E = - ∇Φ - 1/c ∂/∂t A
H = P1² / 2M1 + (P2 - e/c A)² / 2me
Flux = λ Πθ / I
(Pθ)i = λ Πθ = 0
θ = Σ θi
λ/I [|Πθ = 0⟩ + |Πθ = 1⟩]
(1 + e^{iθ}) = e^{iθ/2} [cos θ/2]

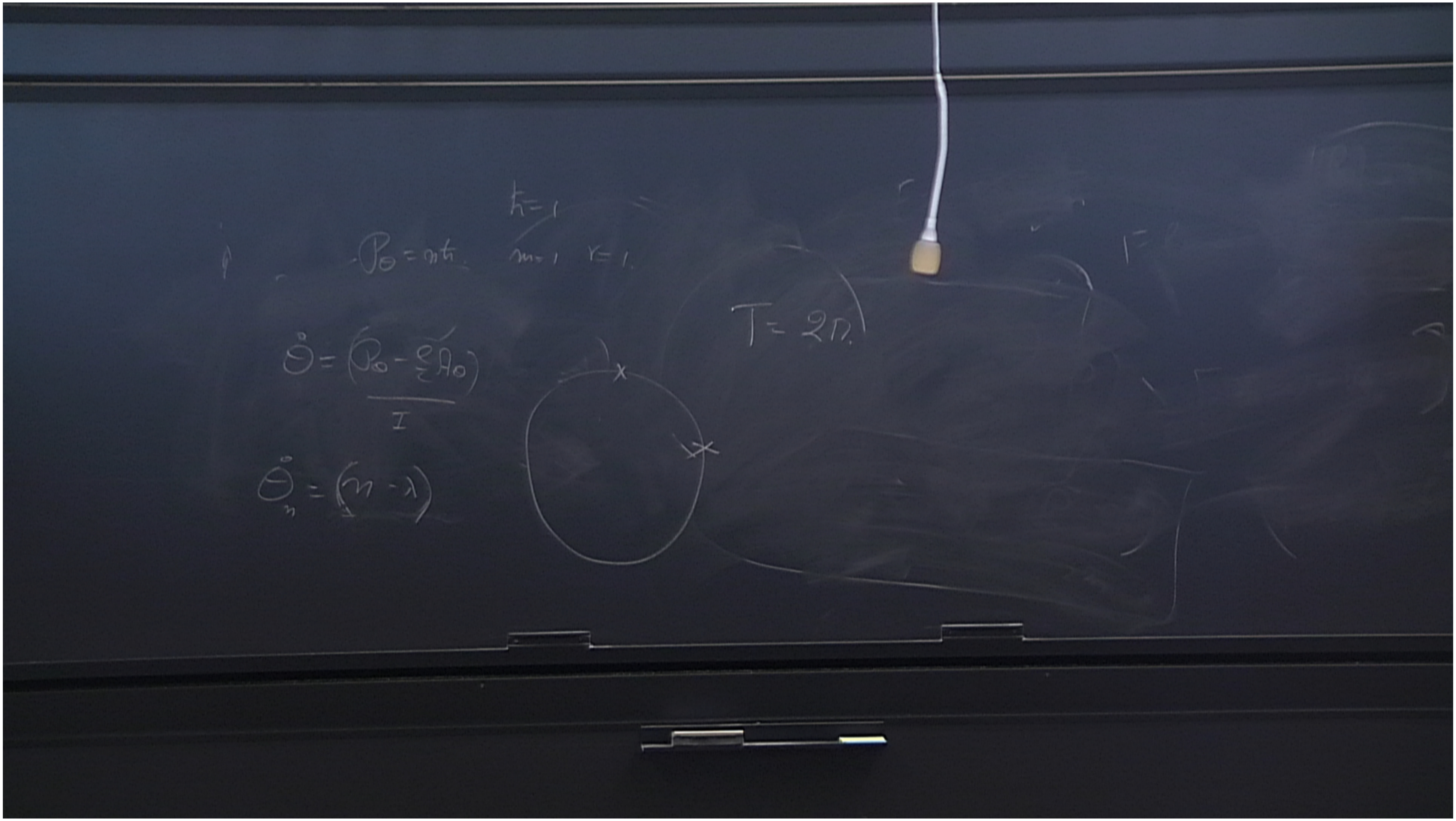


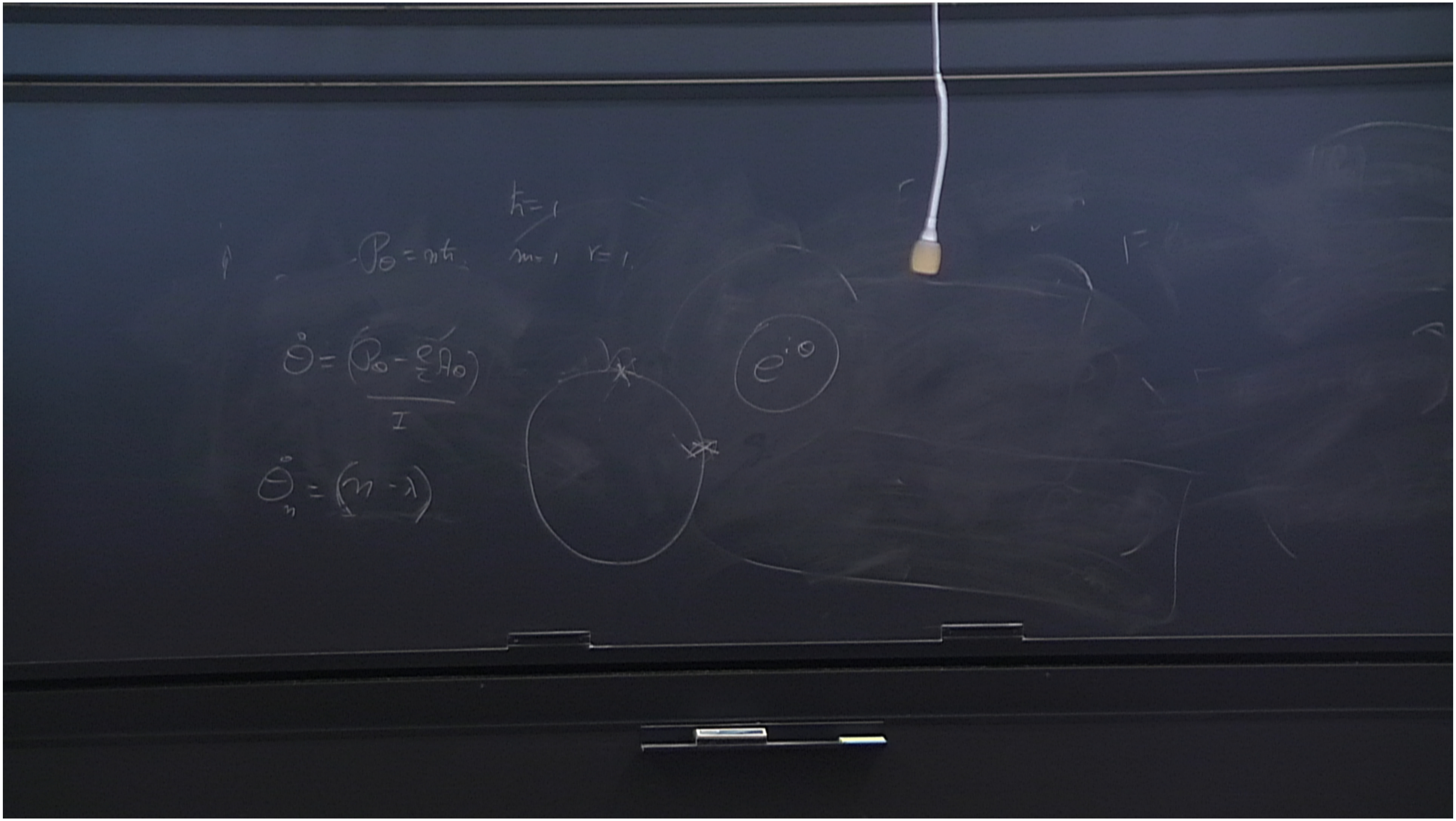
$$L = \frac{1}{2} m_1 \vec{v}_1^{\,2} + \frac{1}{2} m_2 \vec{v}_2^{\,2} + (\vec{v}_1 - \vec{v}_2) \cdot \vec{A}(|\vec{x}_1 - \vec{x}_2|).$$

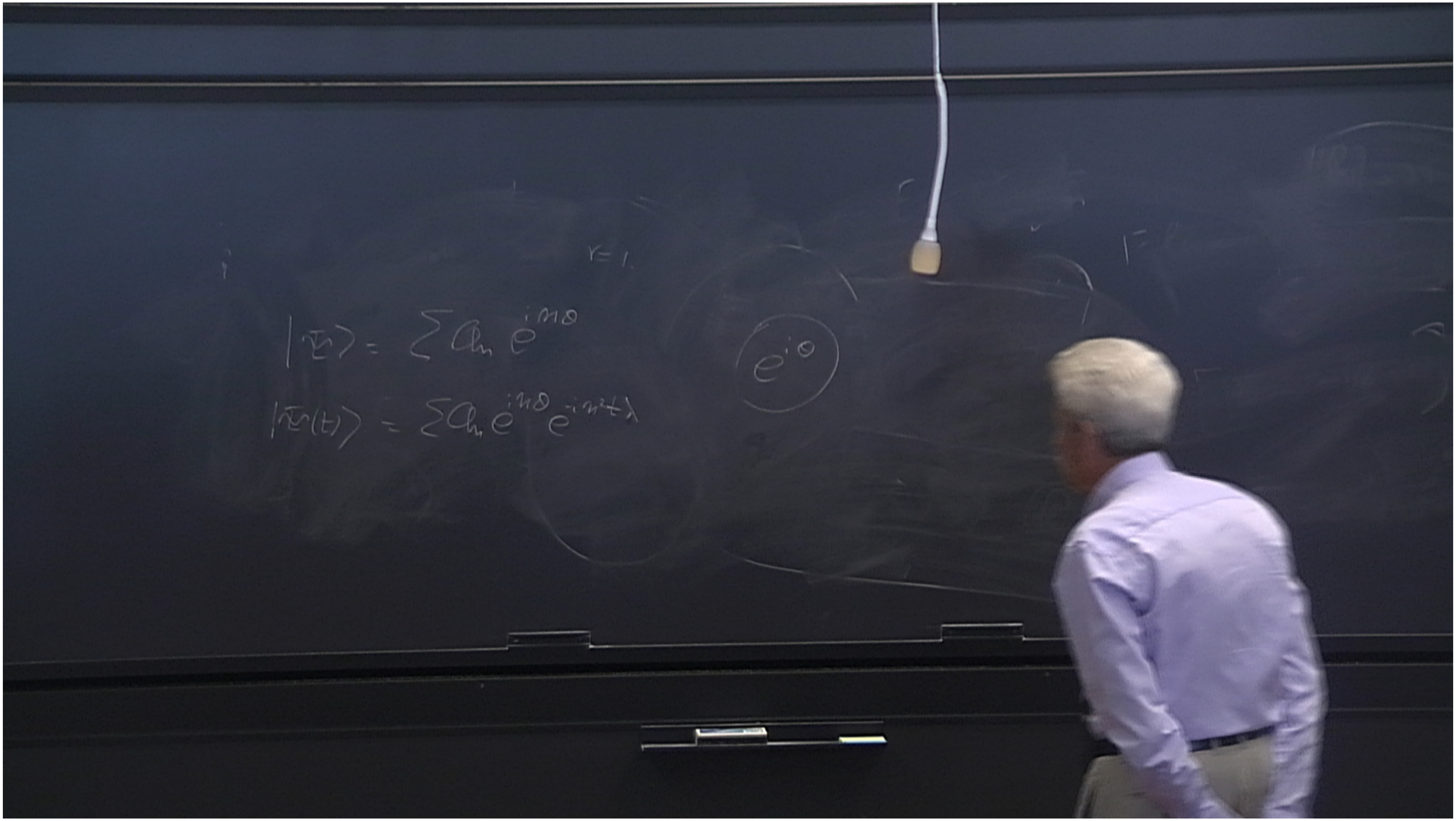
$$\boxed{H = \frac{\vec{p}_1^{\,2}}{2M_1} + \frac{(\vec{p}_2 - e\vec{A})^2}{2m_e}}$$

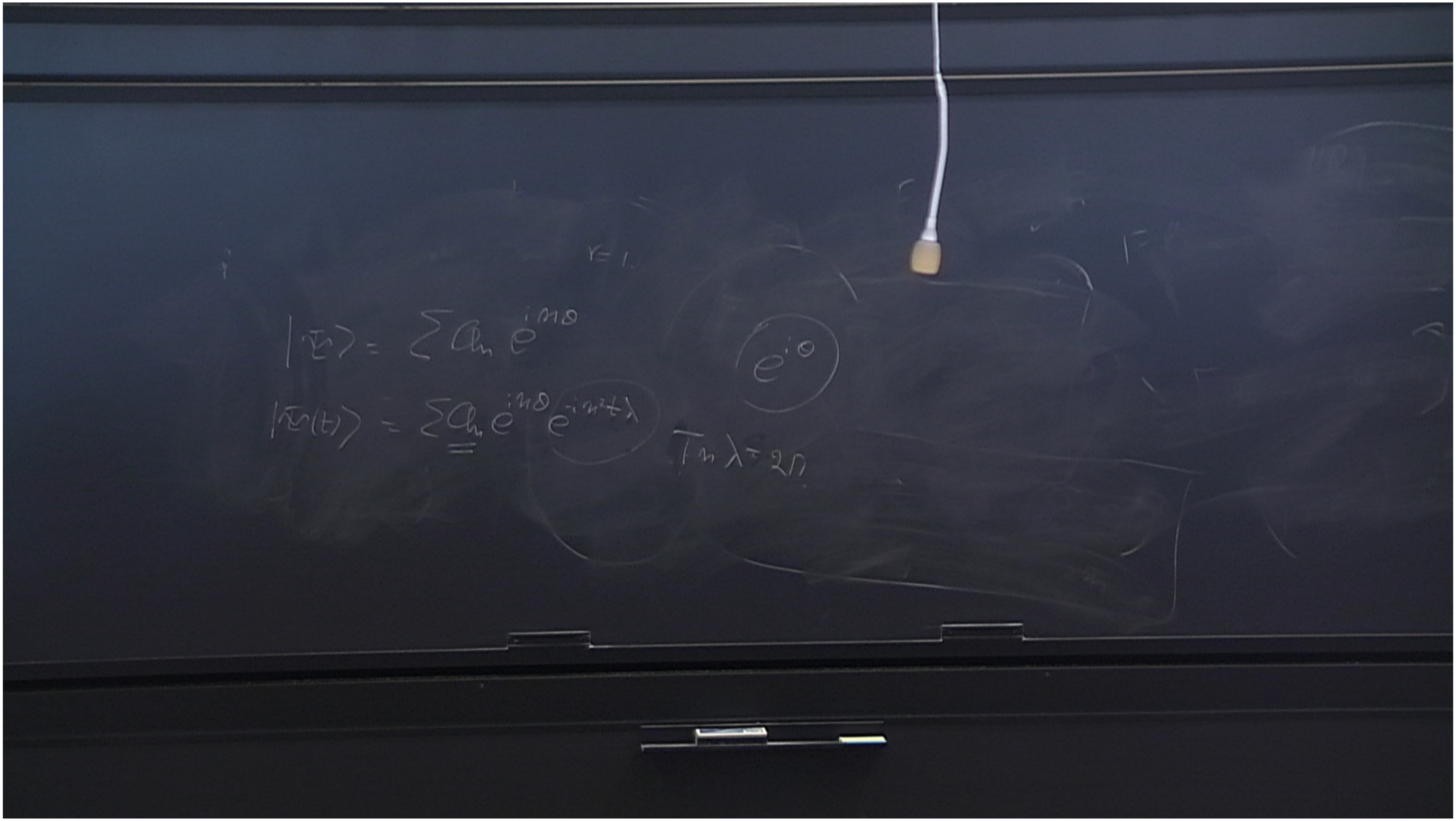
$$\boxed{H = \frac{(\vec{p}_1 + e\vec{A})^2}{2M_1} + \frac{(\vec{p}_2 - e\vec{A})^2}{2m_2}}$$

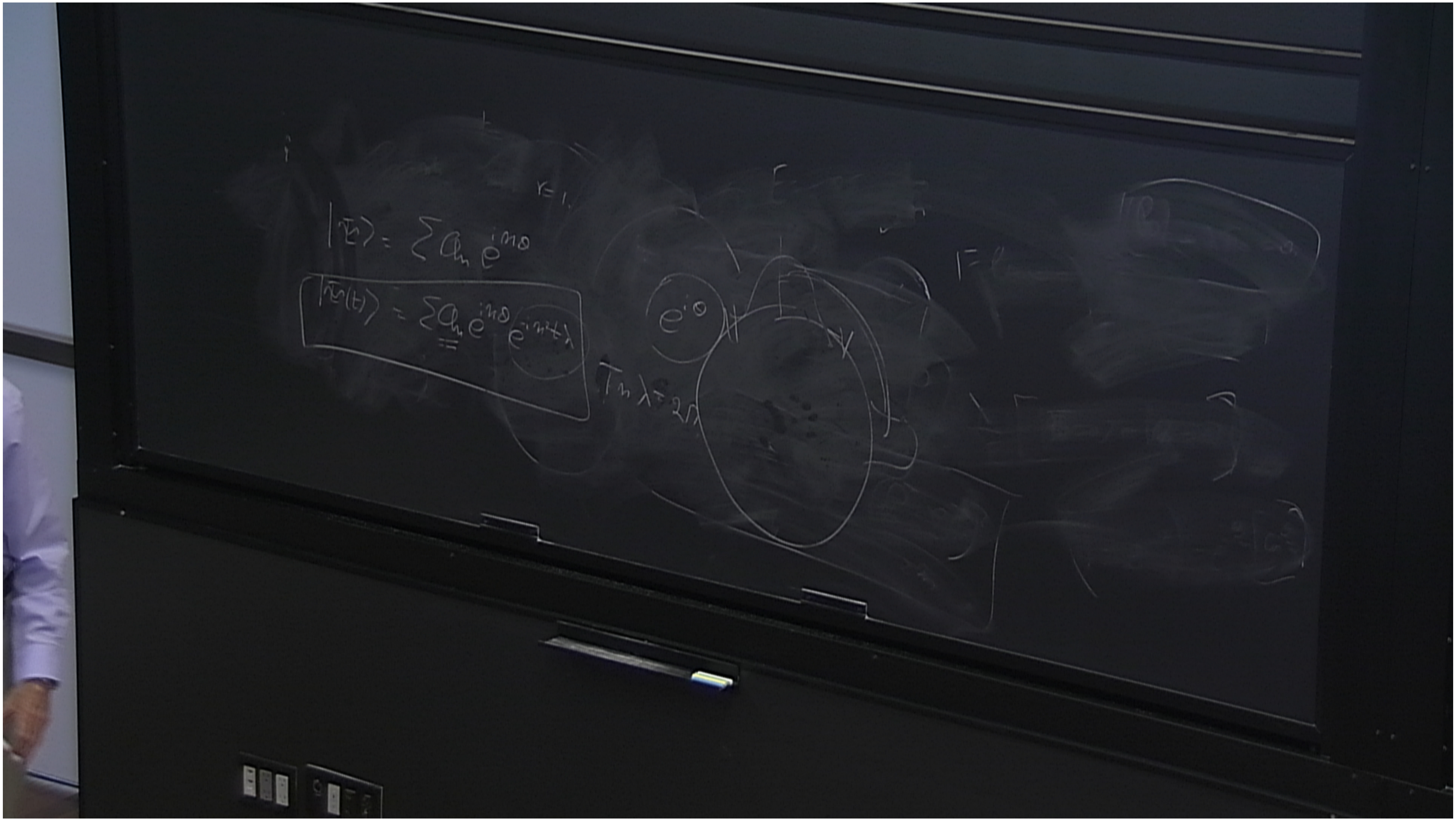

$\hbar = 1$
$P_\theta = n\hbar$ $m = 1$ $r = 1$
$\dot{\theta} = \dfrac{\left(P_\theta - \frac{e}{c} A_\theta\right)}{I}$
$\dot{\Theta}_n = (n - \lambda)$

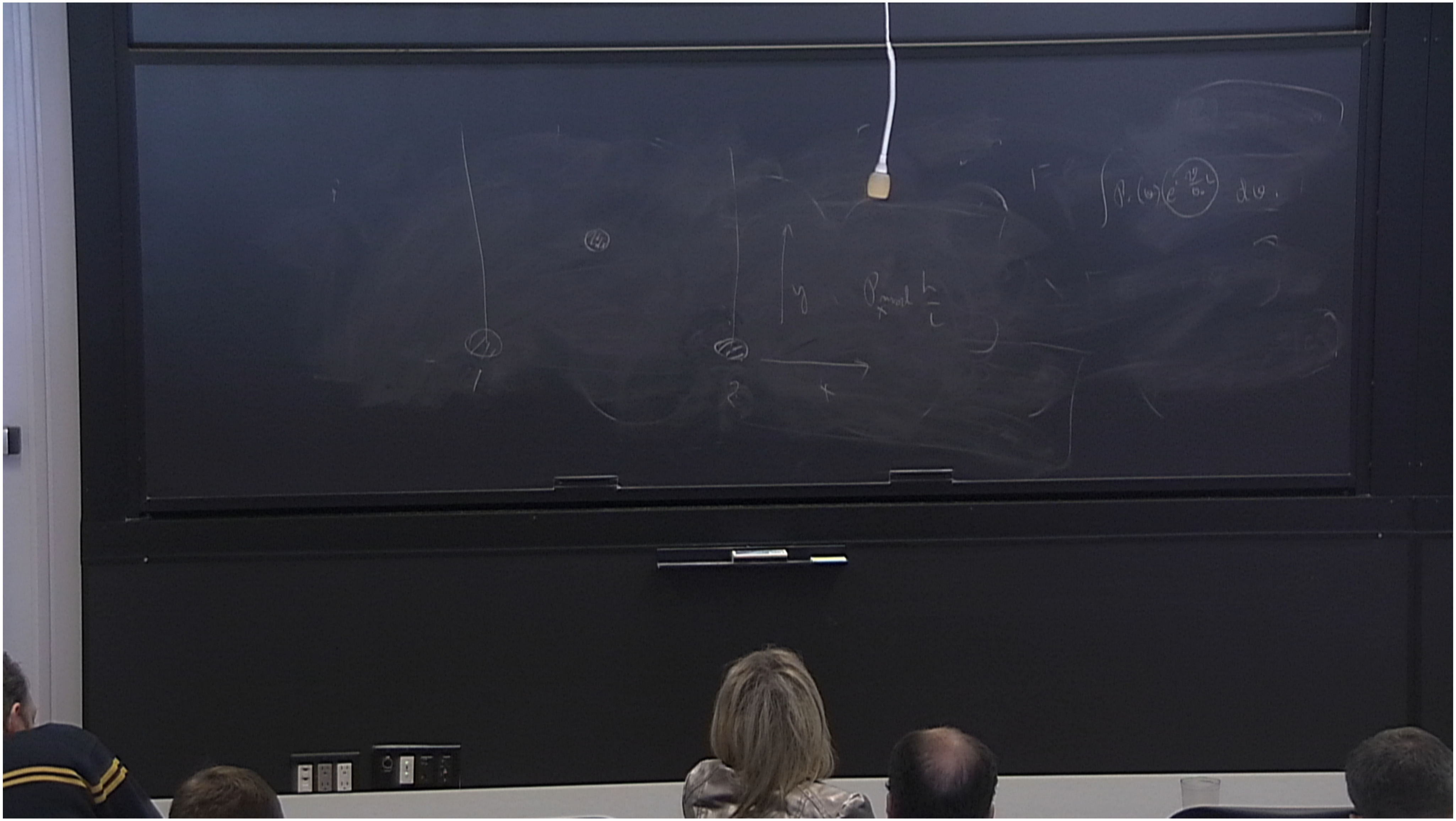

ħ = 1
P_θ = nħ
m = 1   r = 1
θ̇ = (P_θ − (e/c) A_θ) / I
θ̇_n = (n − λ)
T = 2π

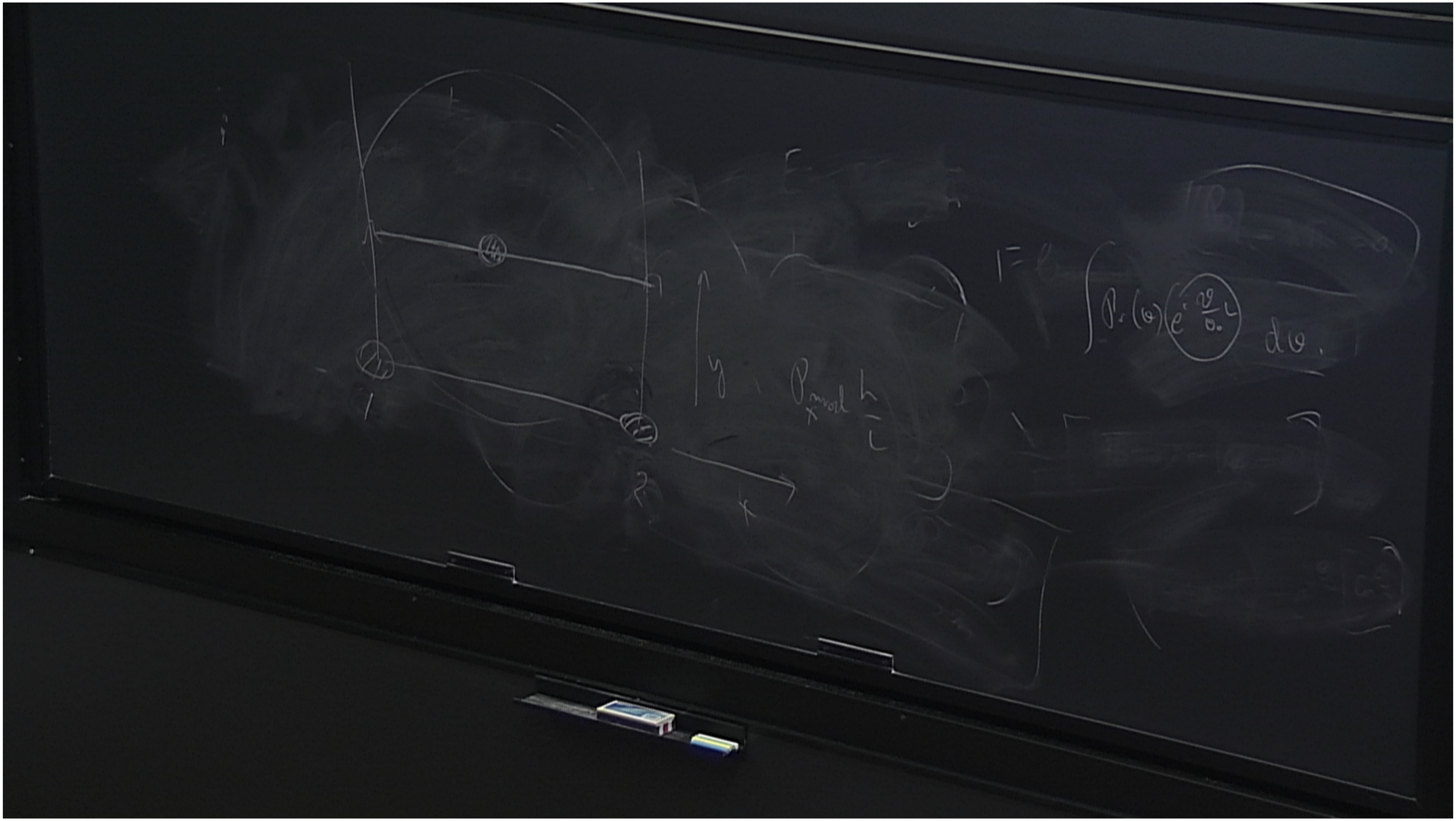

ħ=1
P_θ = nħ
m=1 r=1
θ̇ = (P_θ − (e/c)A_θ)/I
θ̇_n = (n − λ)
e^{iθ}

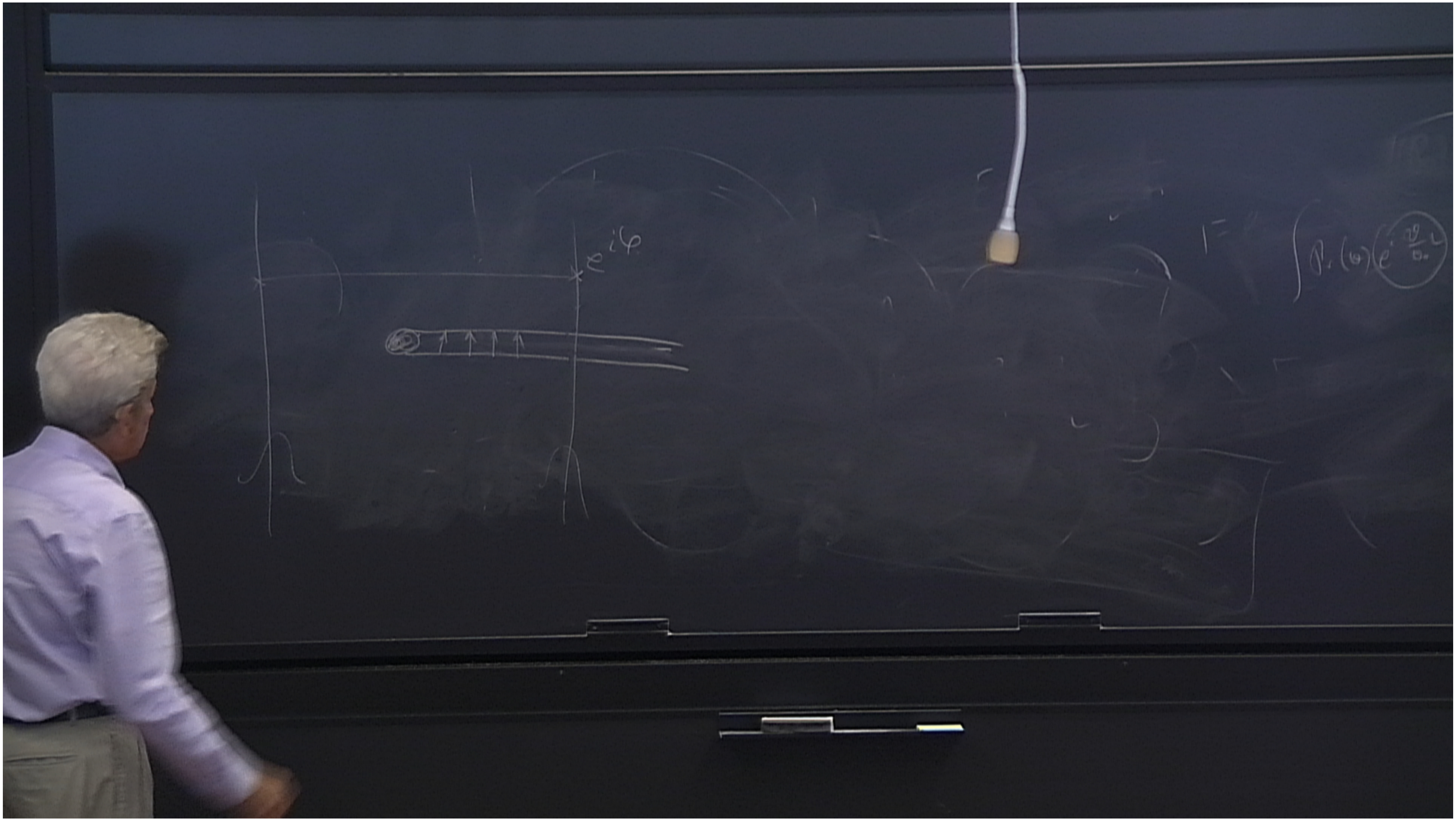

r=1
|Ψ> = Σ a_n e^{inθ}
|Ψ(t)> = Σ a_n e^{inθ} e^{-in²tλ}
e^{iθ}

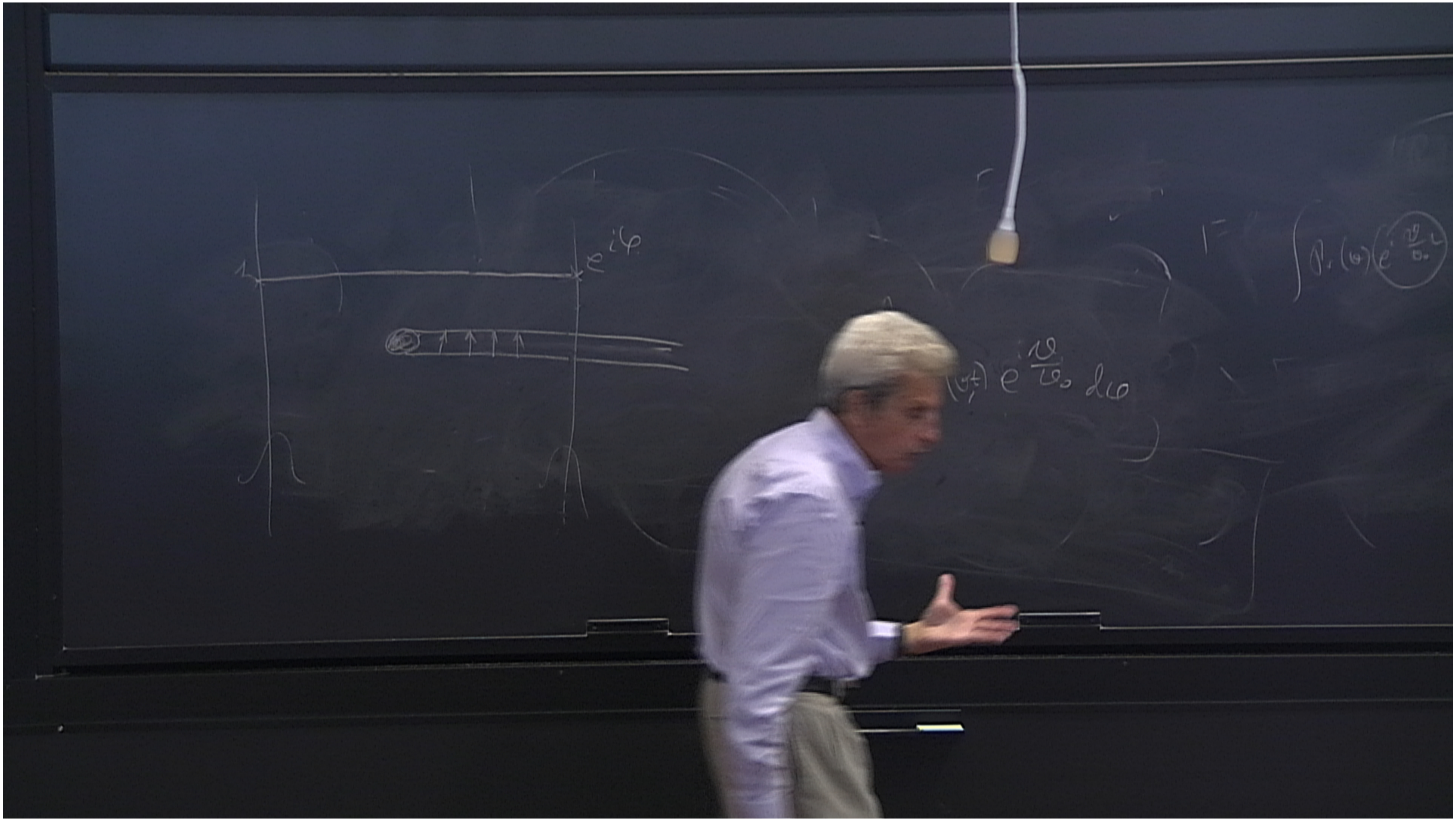

r = 1
|Ψ> = Σ a_n e^{inθ}
|Ψ(t)> = Σ a_n e^{inθ} e^{-in²tλ}
e^{iθ}
T n λ = 2π

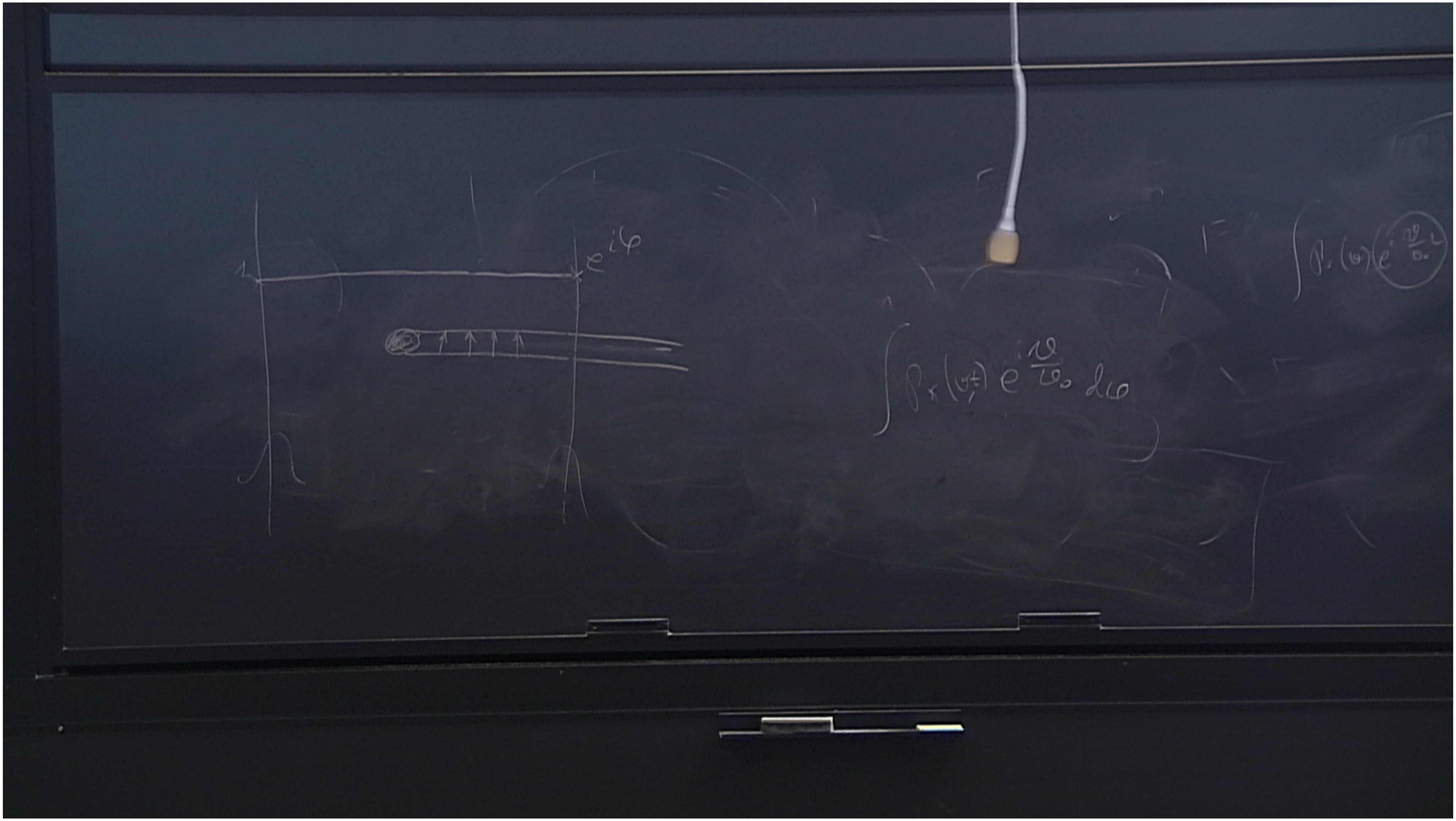

r=1
|Ψ⟩ = Σ a_n e^{inθ}
|Ψ(t)⟩ = Σ a_n e^{inθ} e^{-in²tλ}
e^{iθ}
T_n λ = 2π

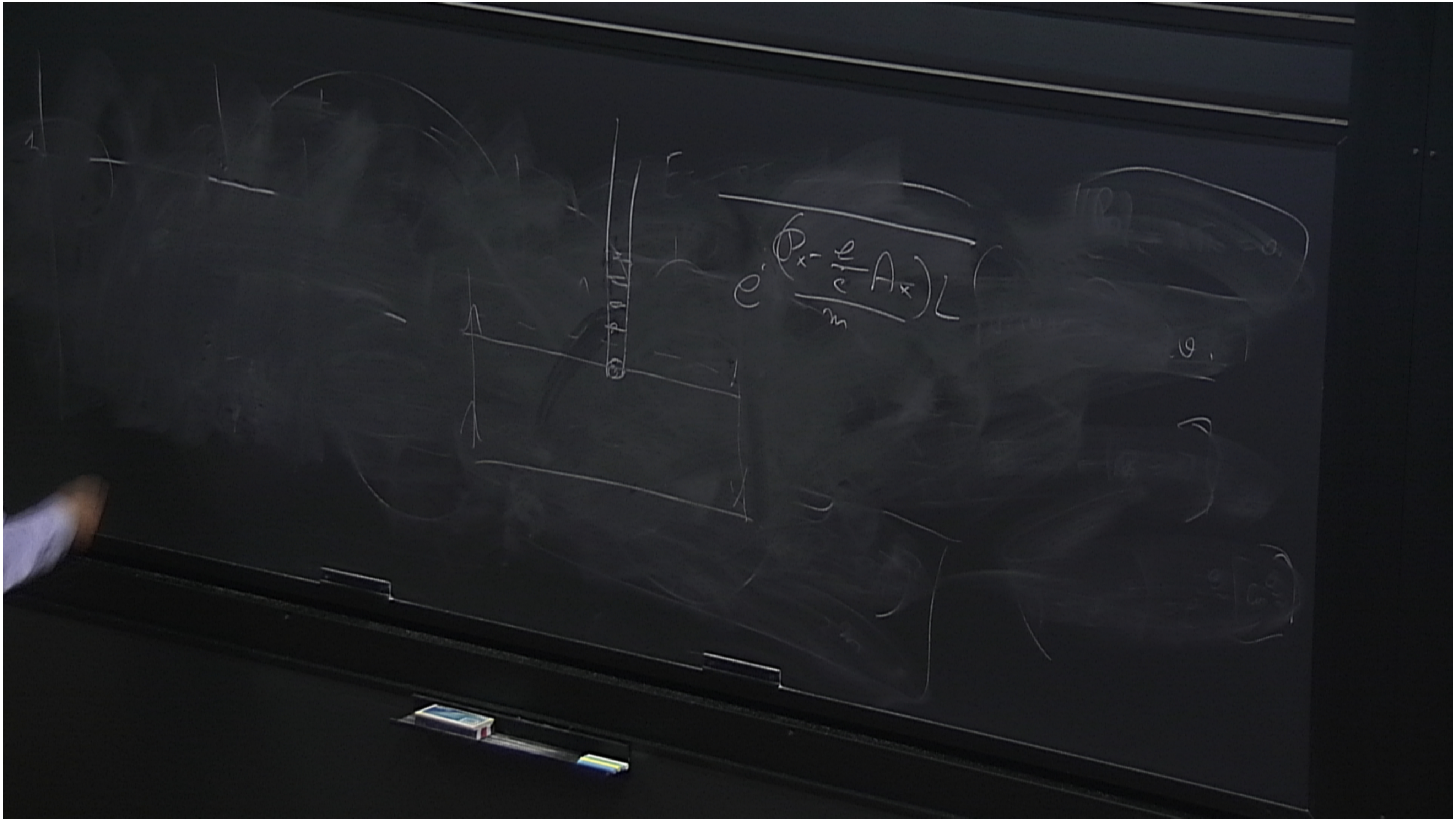


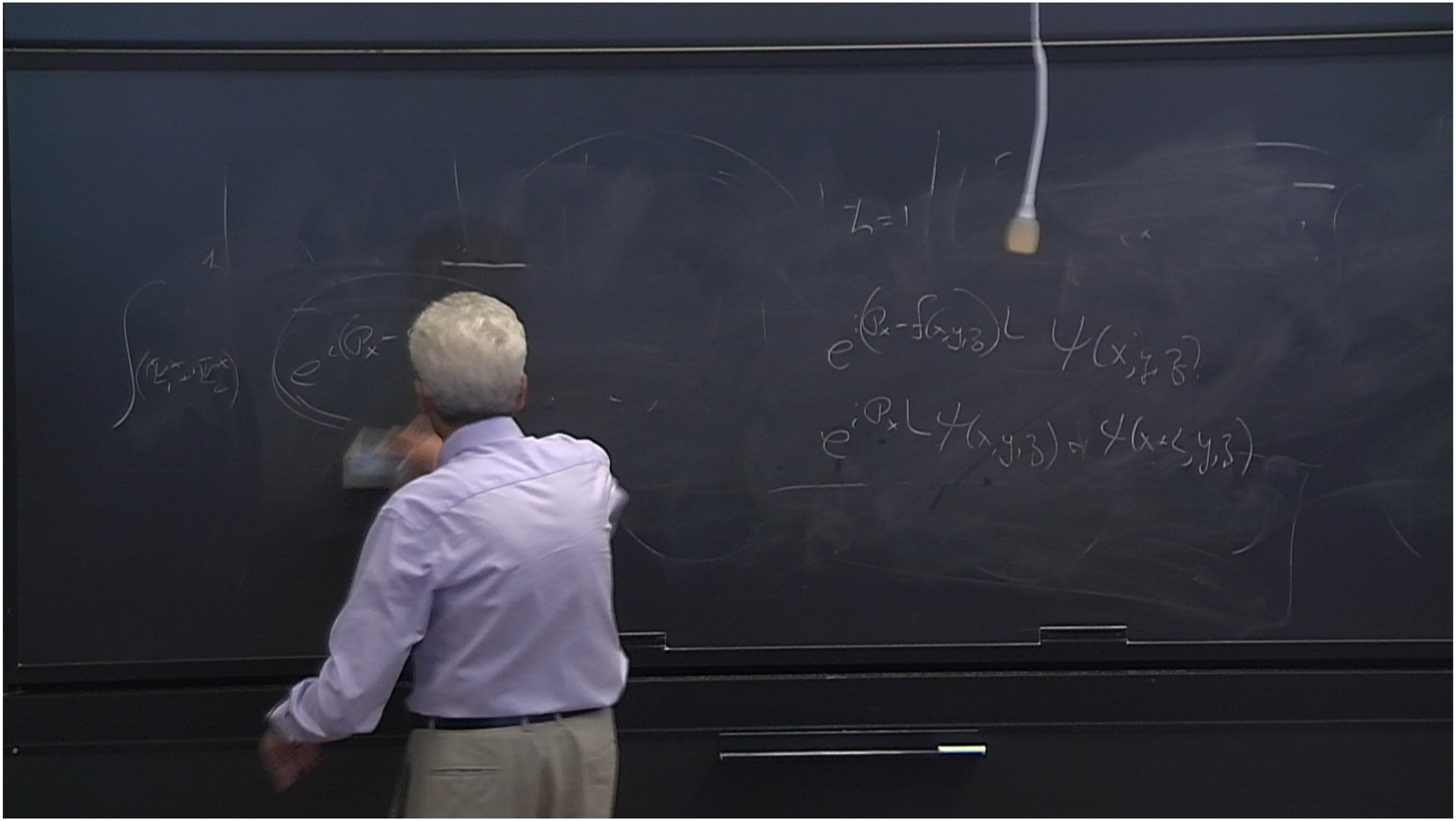

$\int P_r(\theta)\, e^{i\frac{\theta}{\theta_0}L}\, d\theta.$



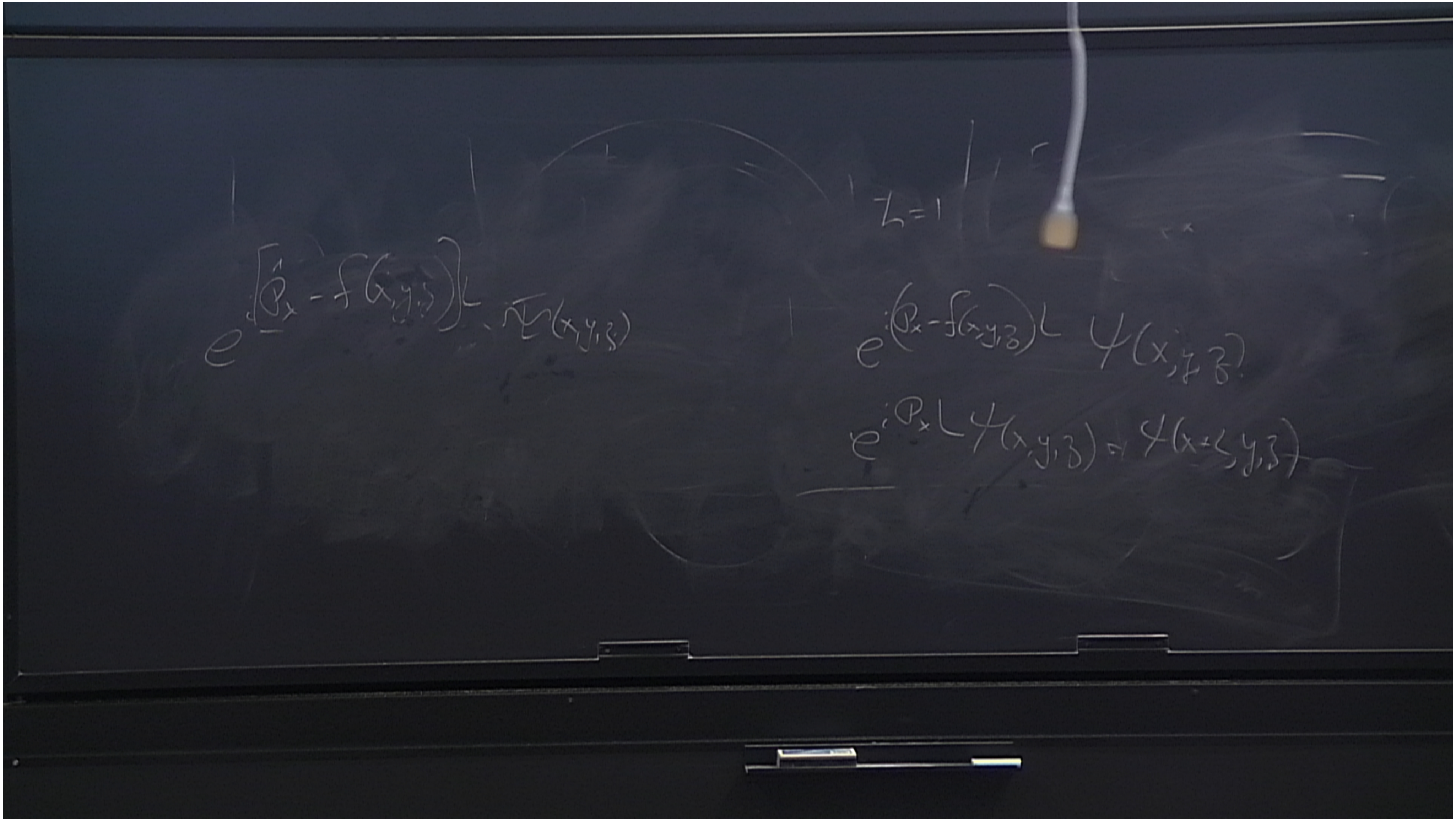


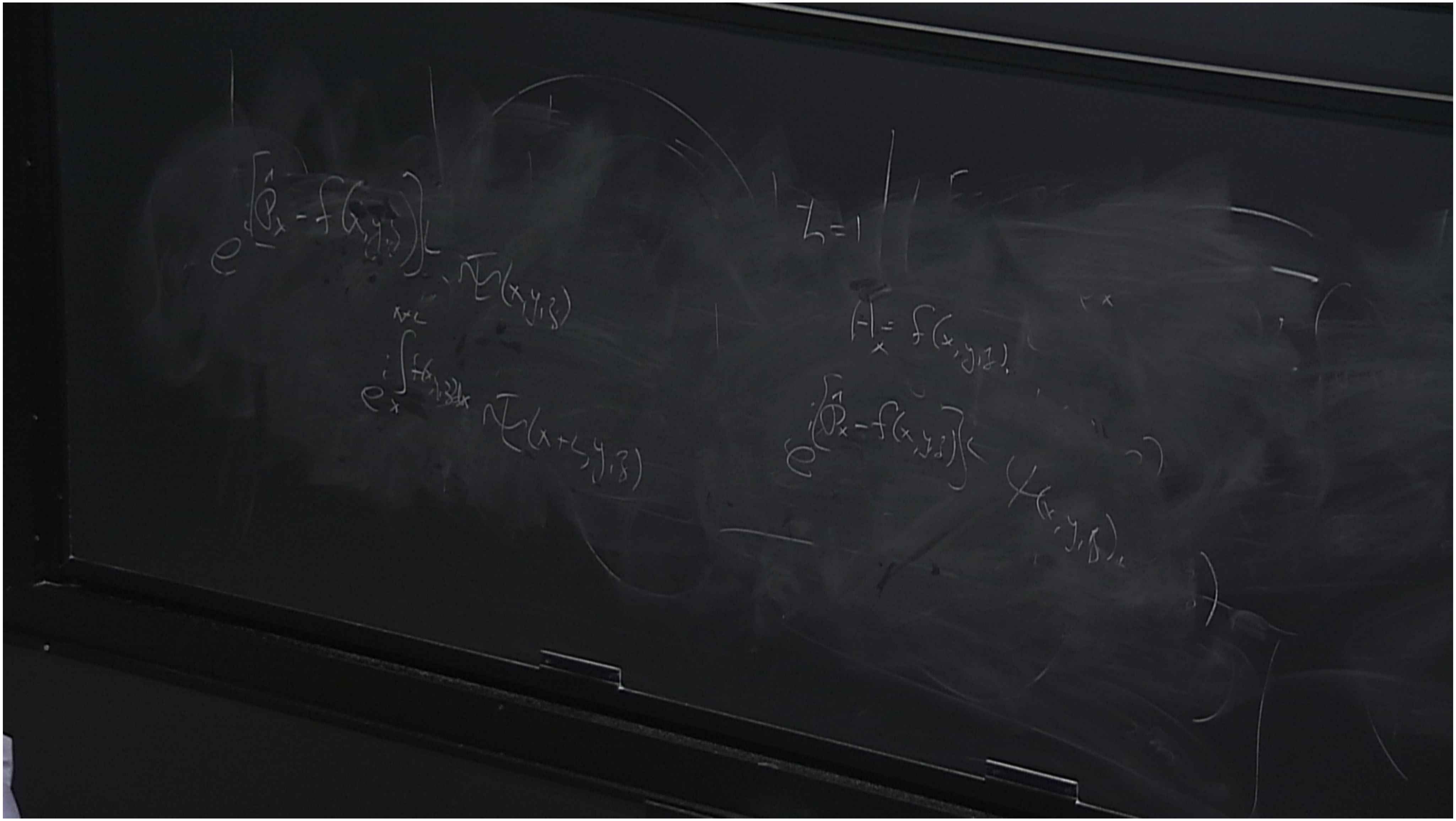

e^{iφ}
∫ρ_x(φ,t) e^{iφ/φ_0} dφ

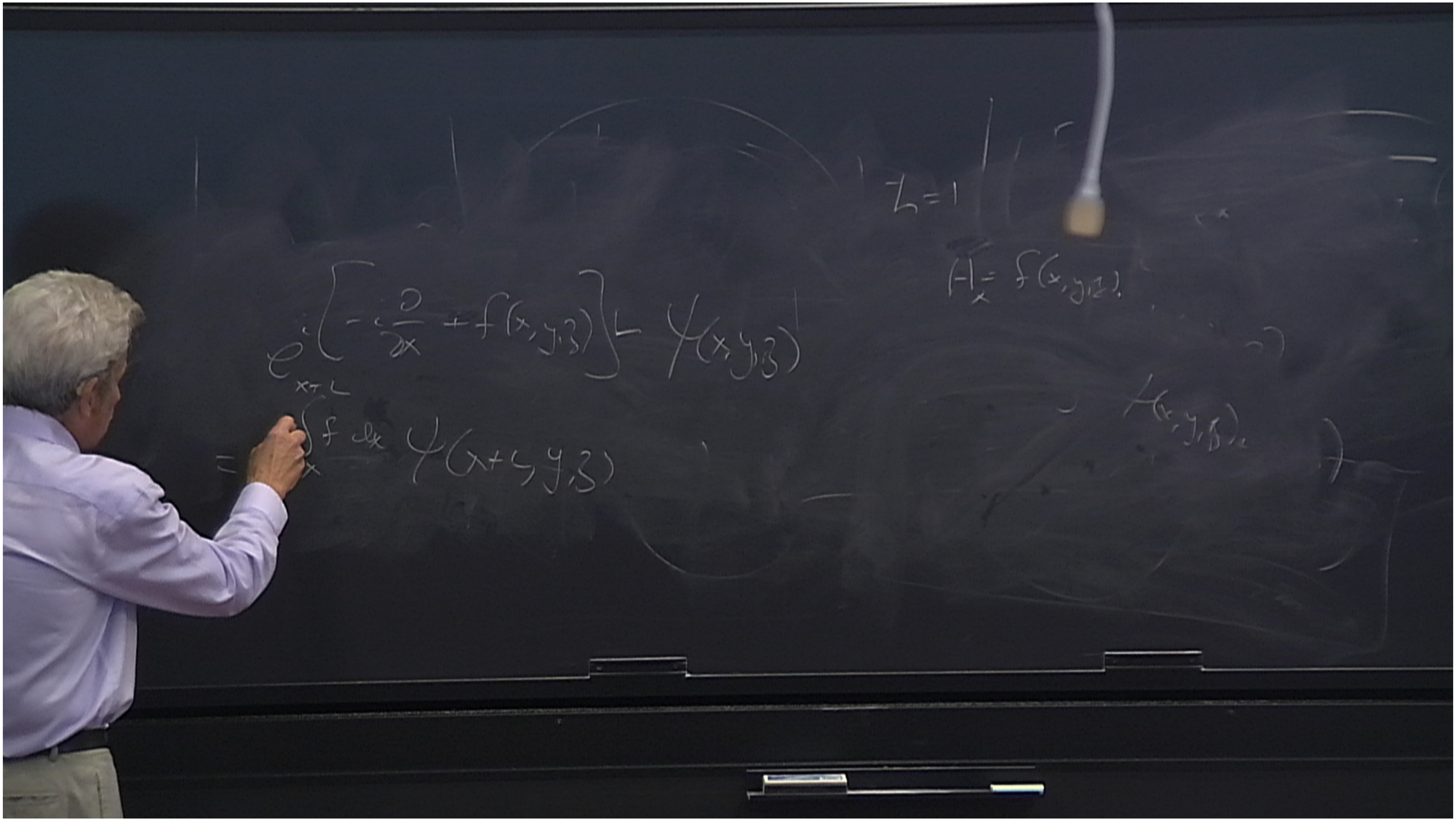

e (P_x - e/c A_x) L

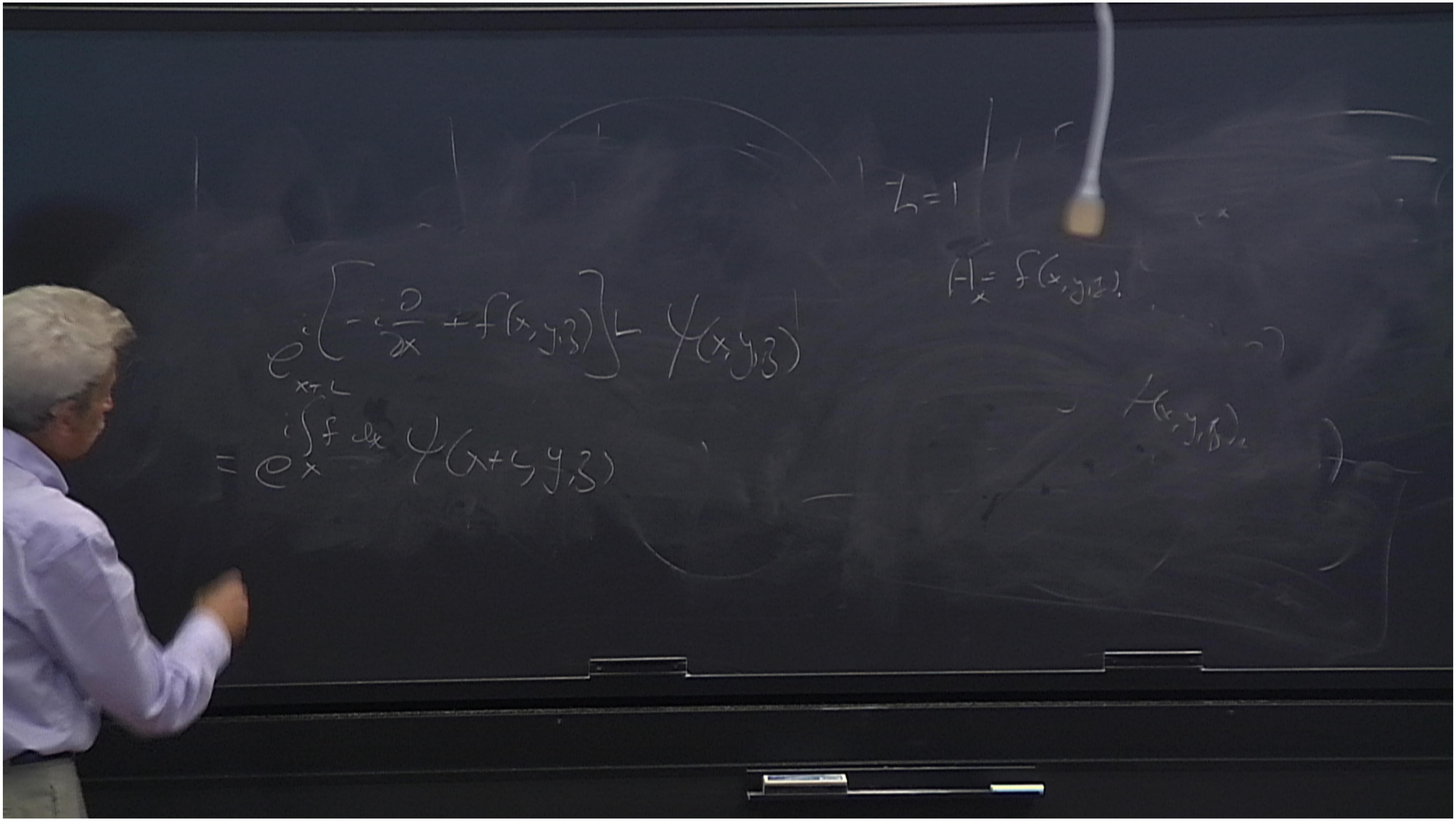


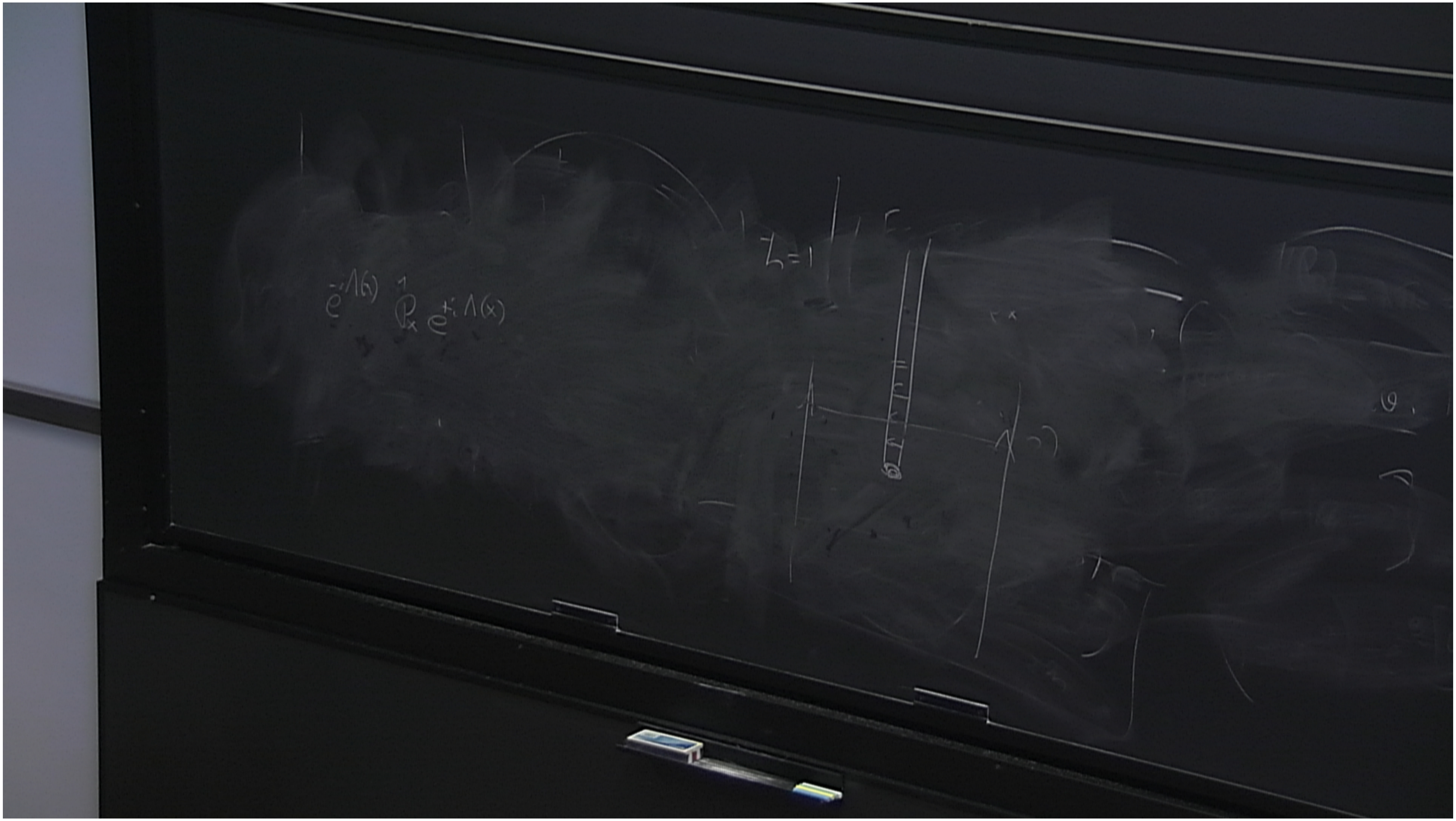
$e^{i(P_x - f(x,y,z))L}\ \psi(x,y,z)$
$e^{iP_x L}\psi(x,y,z) = \psi(x+L,y,z)$

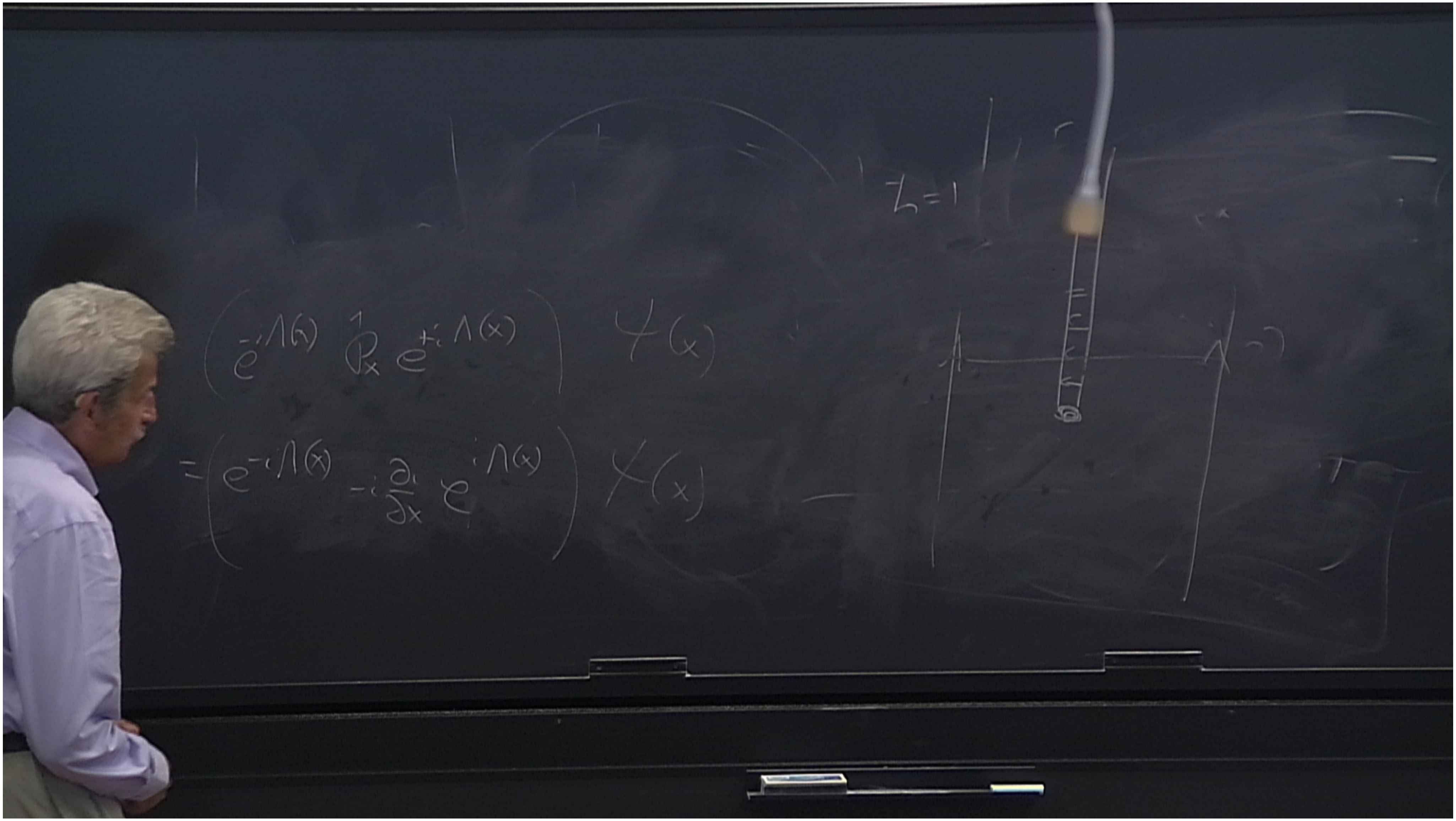

$\hbar = 1$
$e^{i[\hat{P}_x - f(x,y,z)]L}\,\psi(x,y,z)$
$e^{i(\hat{P}_x - f(x,y,z))L}\,\psi(x,y,z)$
$e^{i\hat{P}_x L}\,\psi(x,y,z) = \psi(x+L,y,z)$

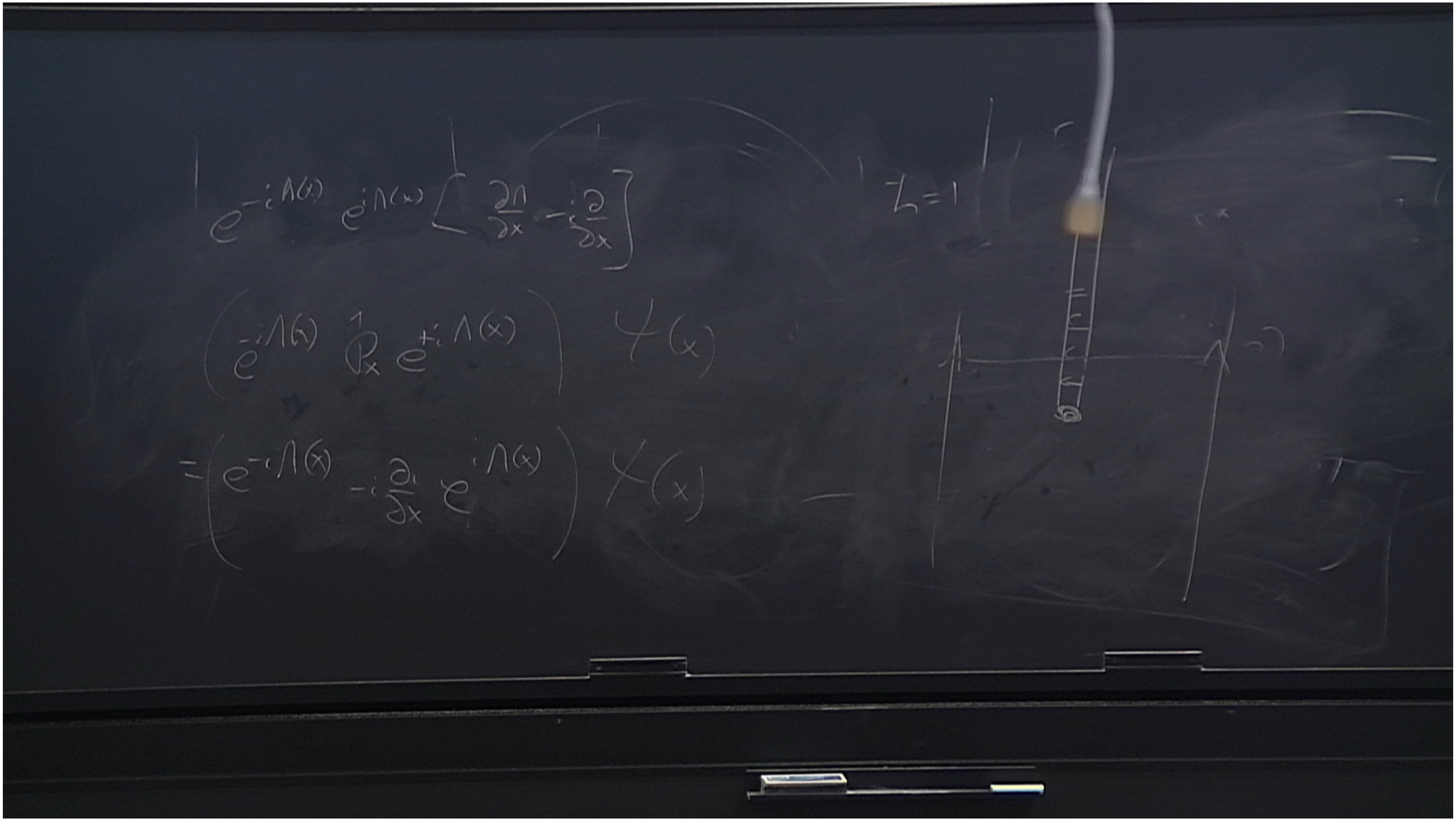

$e^{i[\hat{P}_x - f(x,y,z)]L}\,\tilde{\psi}(x,y,z)$
$e^{i\int_x^{x+L} f(x,y,z)\,dx}\,\tilde{\psi}(x+L,y,z)$
$L=1$
$A_x = f(x,y,z)$
$e^{i[\hat{P}_x - f(x,y,z)]L}\,\psi(x,y,z)_L$




ħ = 1
A_x = f(x,y,z)
e^{i[-i ∂/∂x + f(x,y,z)]L} ψ(x,y,z)
= e^{i ∫_x^{x+L} f dx} ψ(x+L,y,z)
ψ(x,y,z)


$e^{-i\Lambda(x)}\,\hat{P}_x\,e^{+i\Lambda(x)}$

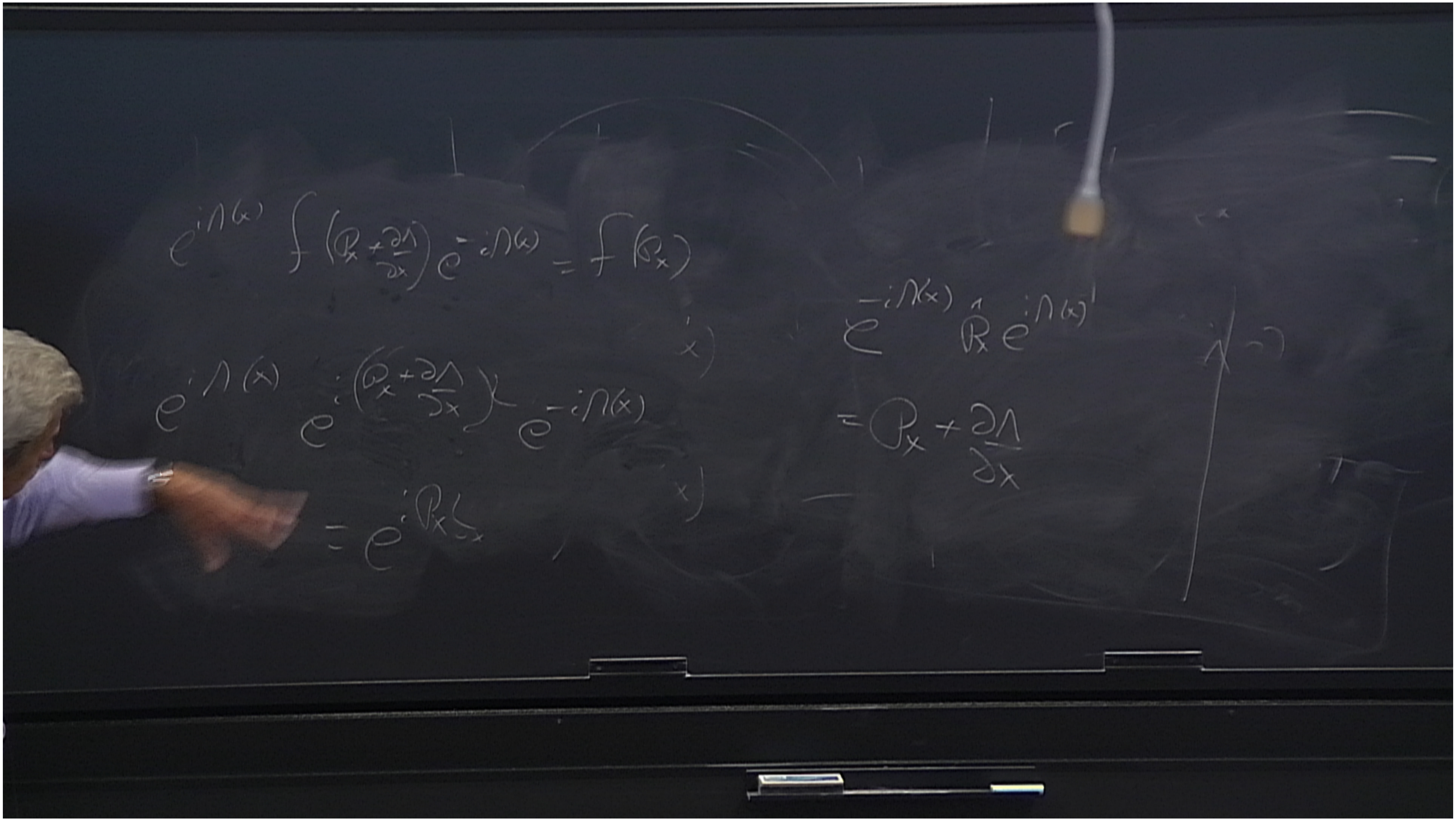

ħ = 1
$\left(e^{-i\Lambda(x)}\,\hat{p}_x\,e^{+i\Lambda(x)}\right)\psi(x)$
$=\left(e^{-i\Lambda(x)}\,-i\frac{\partial}{\partial x}\,e^{i\Lambda(x)}\right)\psi(x)$

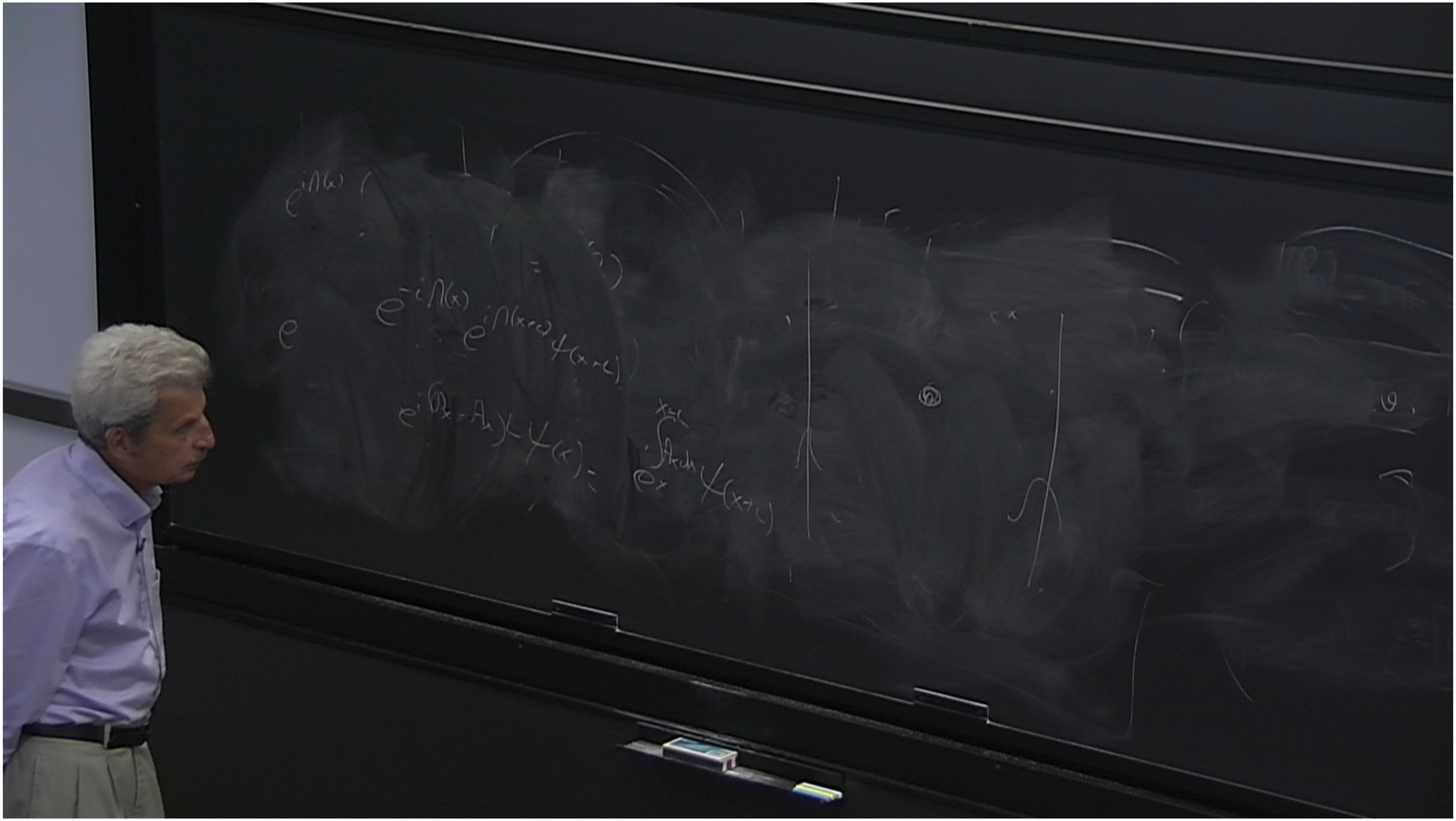

$e^{-i\Lambda(x)} e^{i\Lambda(x)} \left[\frac{\partial \Lambda}{\partial x} - i \frac{\partial}{\partial x} \right]$
$\left(e^{-i\Lambda(x)} \hat{P}_x e^{+i\Lambda(x)} \right) \psi(x)$
$= \left(e^{-i\Lambda(x)} \, -i \frac{\partial}{\partial x} \, e^{i\Lambda(x)} \right) \psi(x)$
$\hbar = 1$

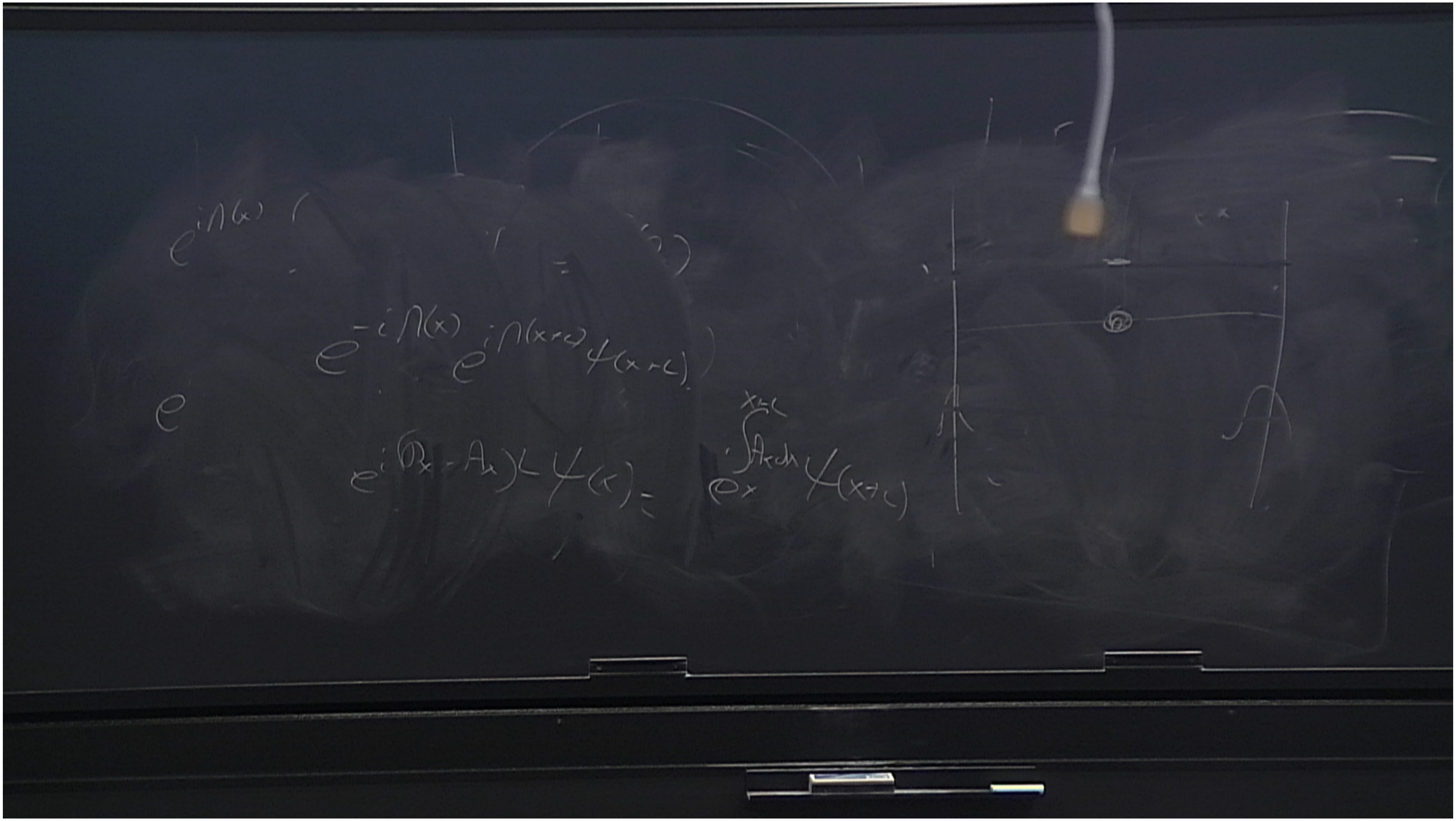
$$e^{i\Lambda(x)} f\left(P_x + \frac{\partial\Lambda}{\partial x}\right) e^{-i\Lambda(x)} = f(P_x)$$

$$e^{i\Lambda(x)}\left(P_x + \frac{\partial\Lambda}{\partial x}\right) e^{-i\Lambda(x)} = P_x$$

$$e^{-i\Lambda(x)} \hat{P}_x e^{i\Lambda(x)} = P_x + \frac{\partial\Lambda}{\partial x}$$


$e^{i\Lambda(x)} f\left(P_x + \frac{\partial\Lambda}{\partial x}\right) e^{-i\Lambda(x)} = f(P_x)$
$e^{i\Lambda(x)} e^{i\left(P_x + \frac{\partial\Lambda}{\partial x}\right)L} e^{-i\Lambda(x)}$
$= e^{iP_x L_x}$
$e^{-i\Lambda(x)} \hat{P}_x e^{i\Lambda(x)}$
$= P_x + \frac{\partial\Lambda}{\partial x}$





$e^{i\Lambda(x)}$
$e^{-i\Lambda(x)} e^{i\Lambda(x+L)} \psi(x+L)$
$e^{i(P_x - A_x)L} \psi(x) = e^{i\int_x^{x+L} A_x dx} \psi(x+L)$