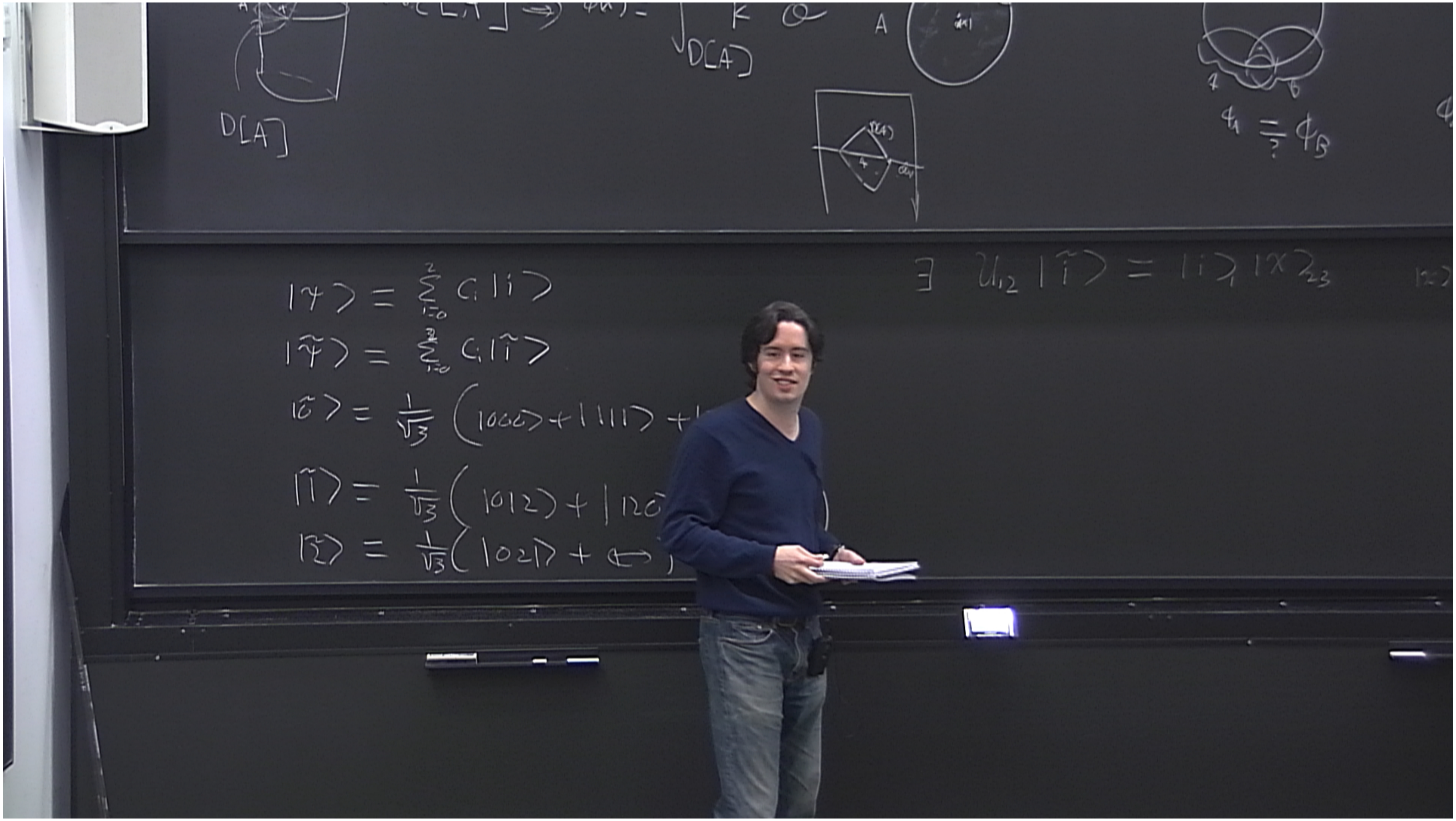
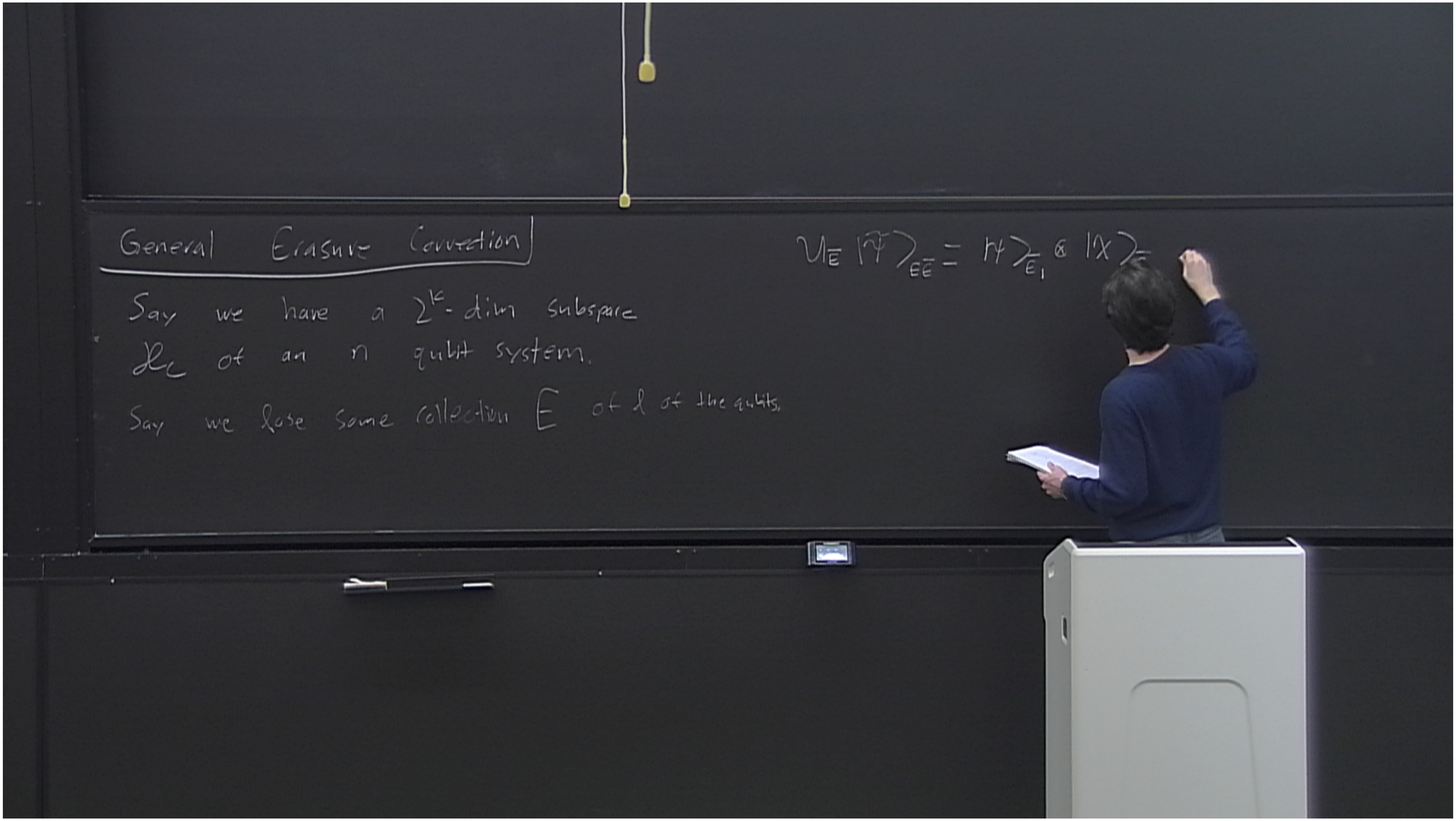
Title: Bulk Locality and Quantum Error Correction in AdS/CFT

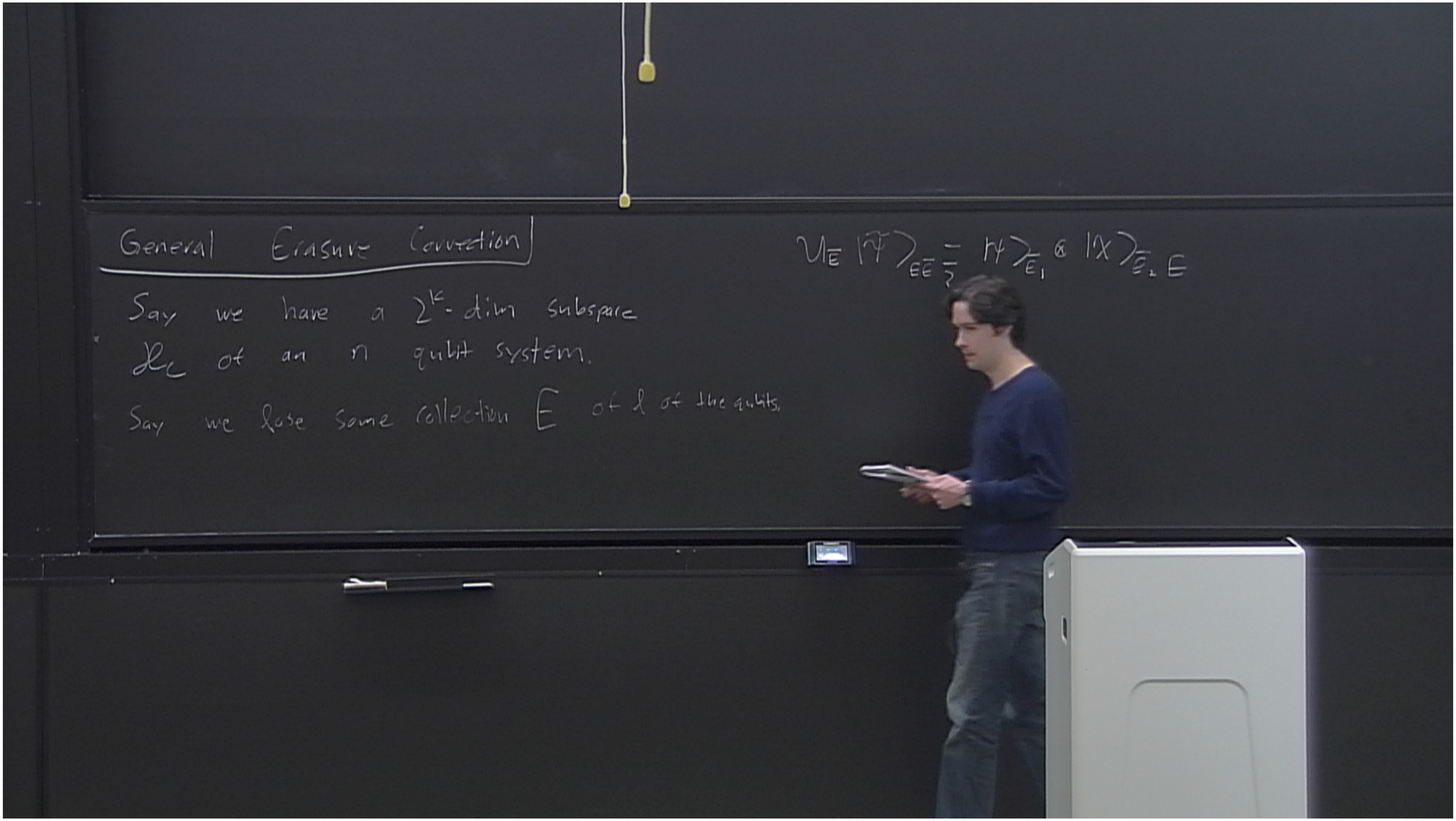
Date: Dec 15, 2014 02:00 PM

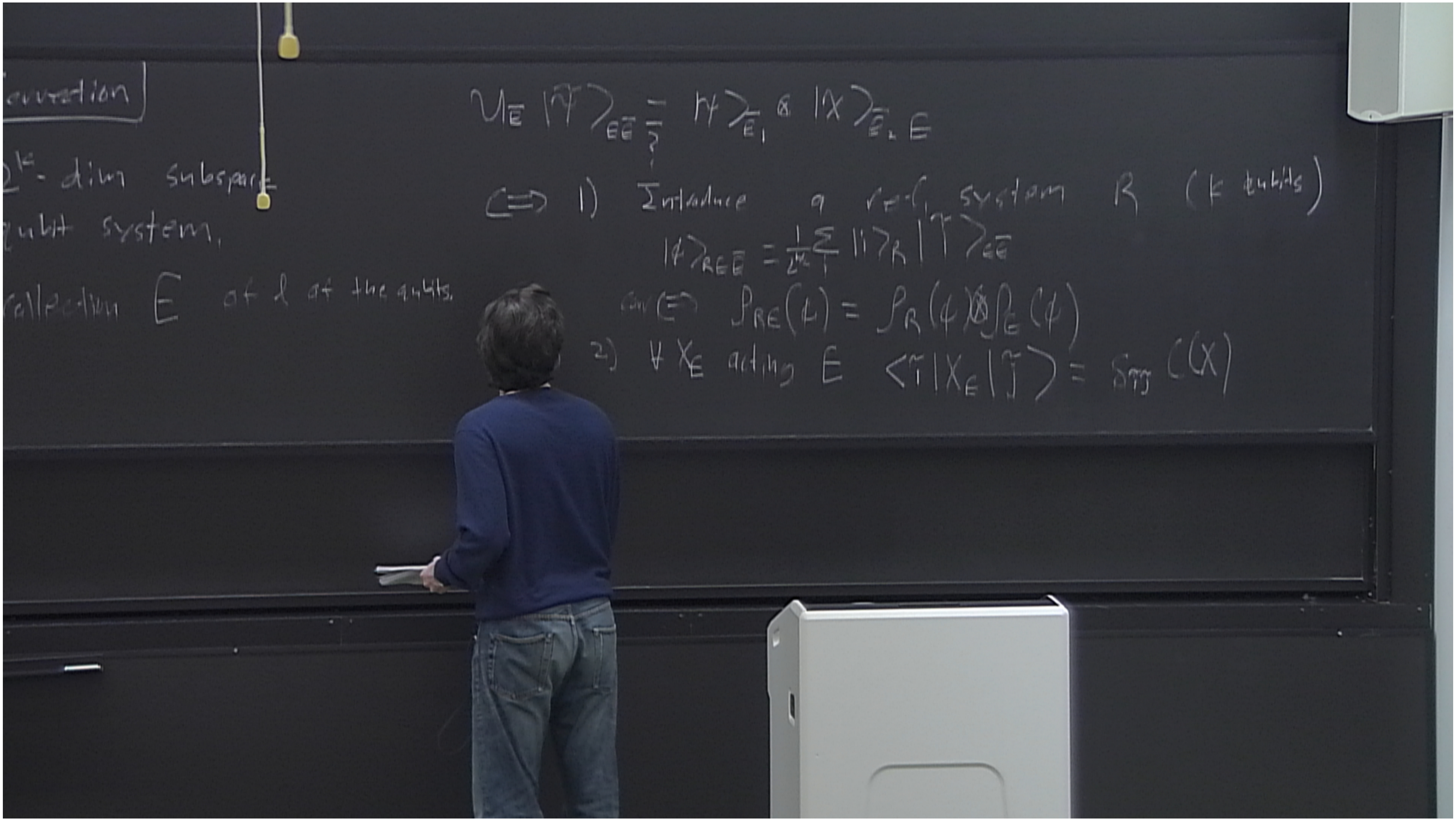
URL: http://pirsa.org/14120046

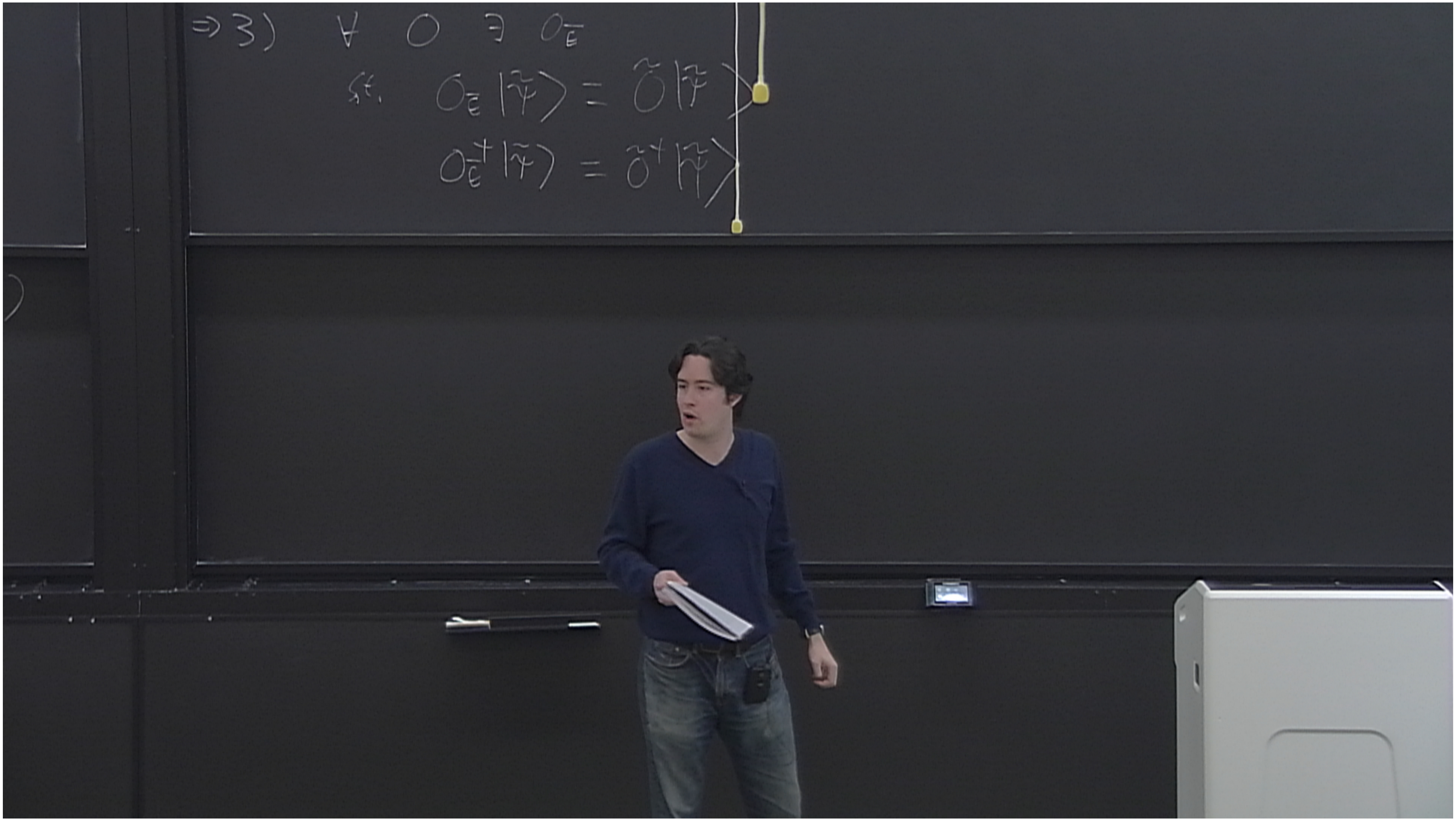
Abstract:


D[A]
|ψ> = Σ c_i |i>
|ψ̃> = Σ c_i |ĩ>

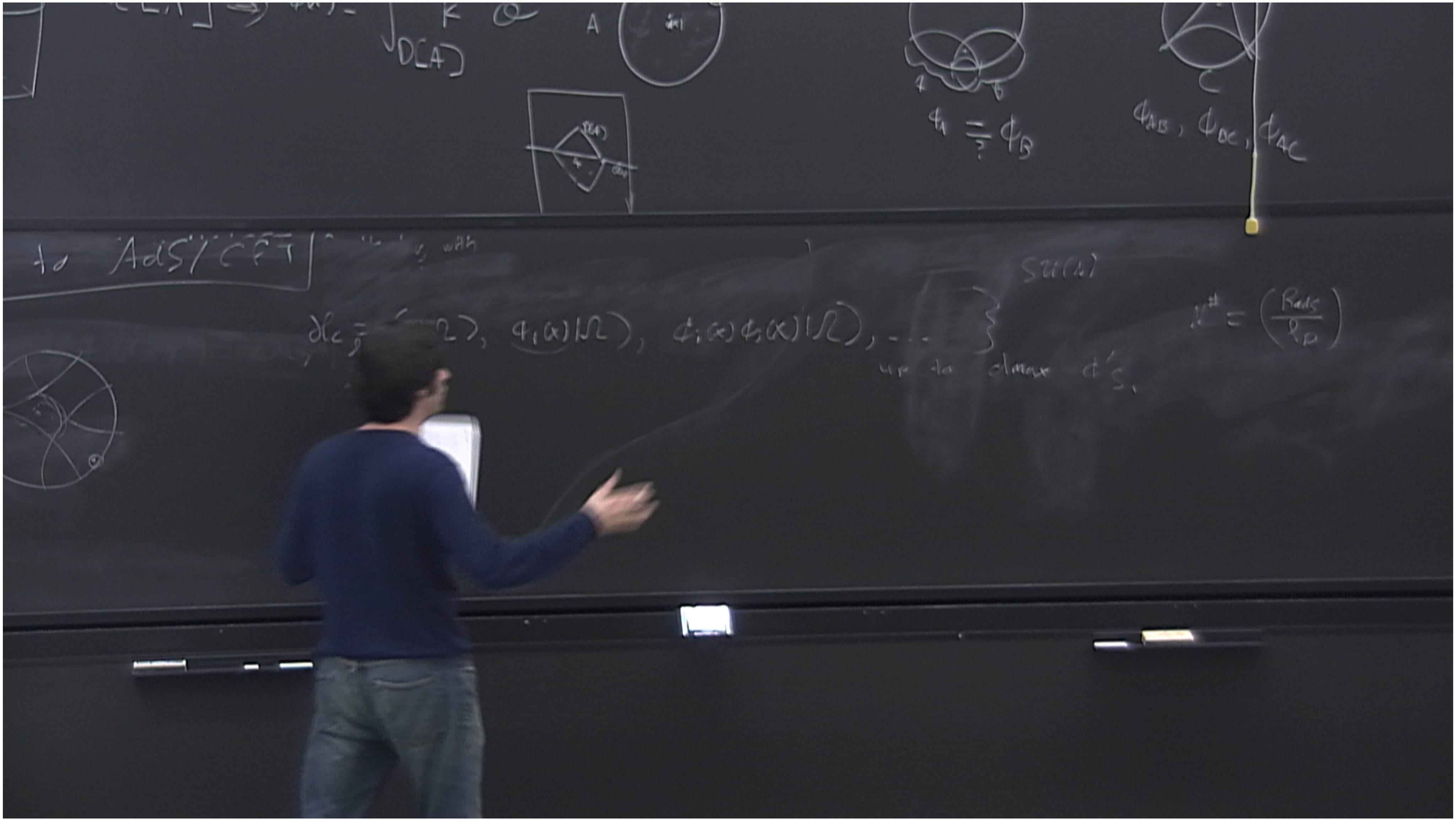

General Erasure Correction
Say we have a 2^k-dim subspace
$\mathcal{H}_C$ of an n qubit system.
Say we lose some collection E of l of the qubits.
$U_{\bar{E}} |\tilde{\Psi}\rangle_{E\bar{E}} = |\Psi\rangle_{E_1} \otimes |\chi\rangle_{\bar{E}}$

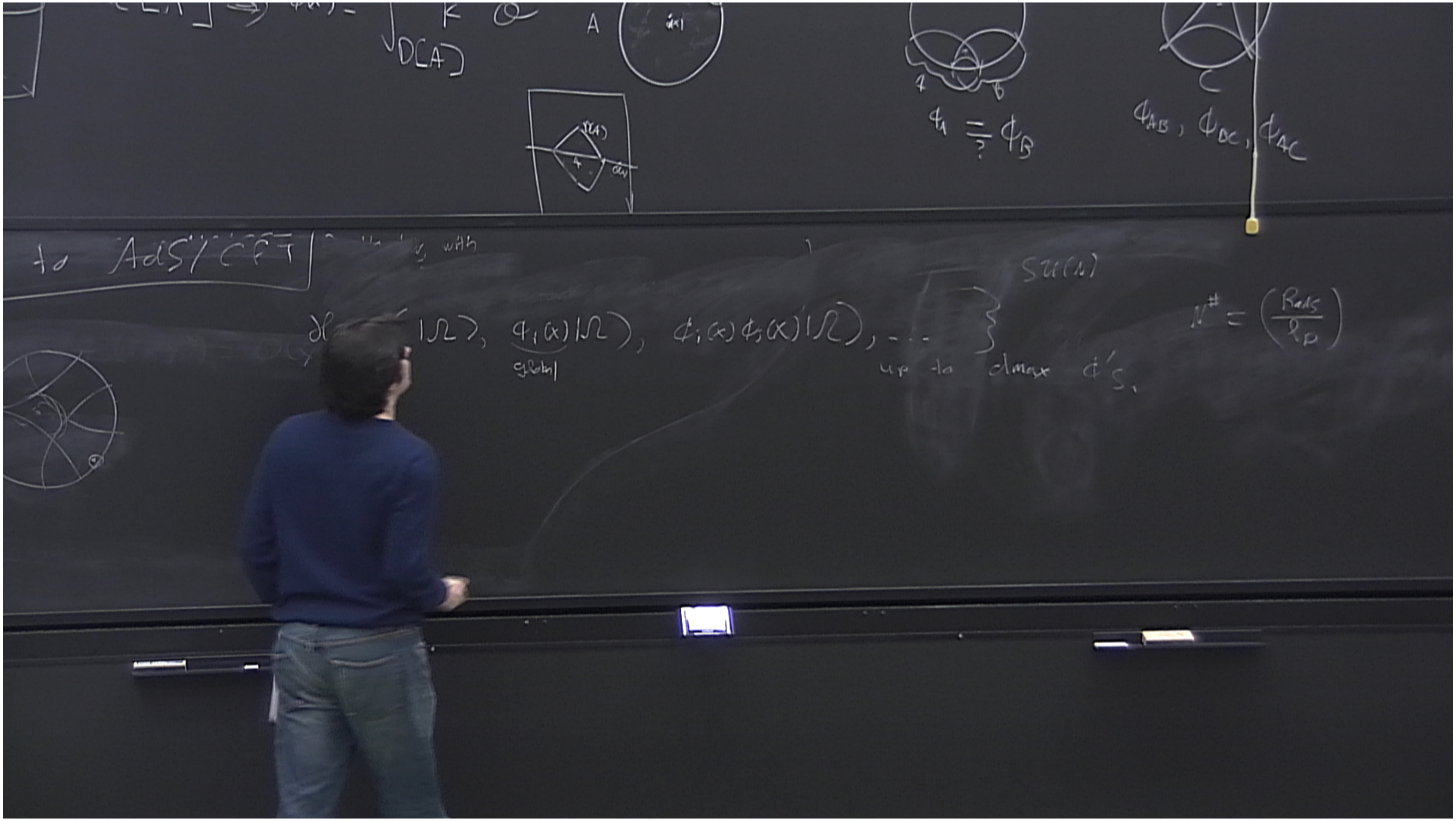

General Erasure Correction
Say we have a 2^k-dim subspace
$\mathcal{H}_C$ of an n qubit system.
Say we lose some collection E of ℓ of the qubits.
$U_{\bar{E}} |\tilde{\Psi}\rangle_{E\bar{E}} \overset{?}{=} |\psi\rangle_{\bar{E}_1} \otimes |\chi\rangle_{\bar{E}_2 E}$

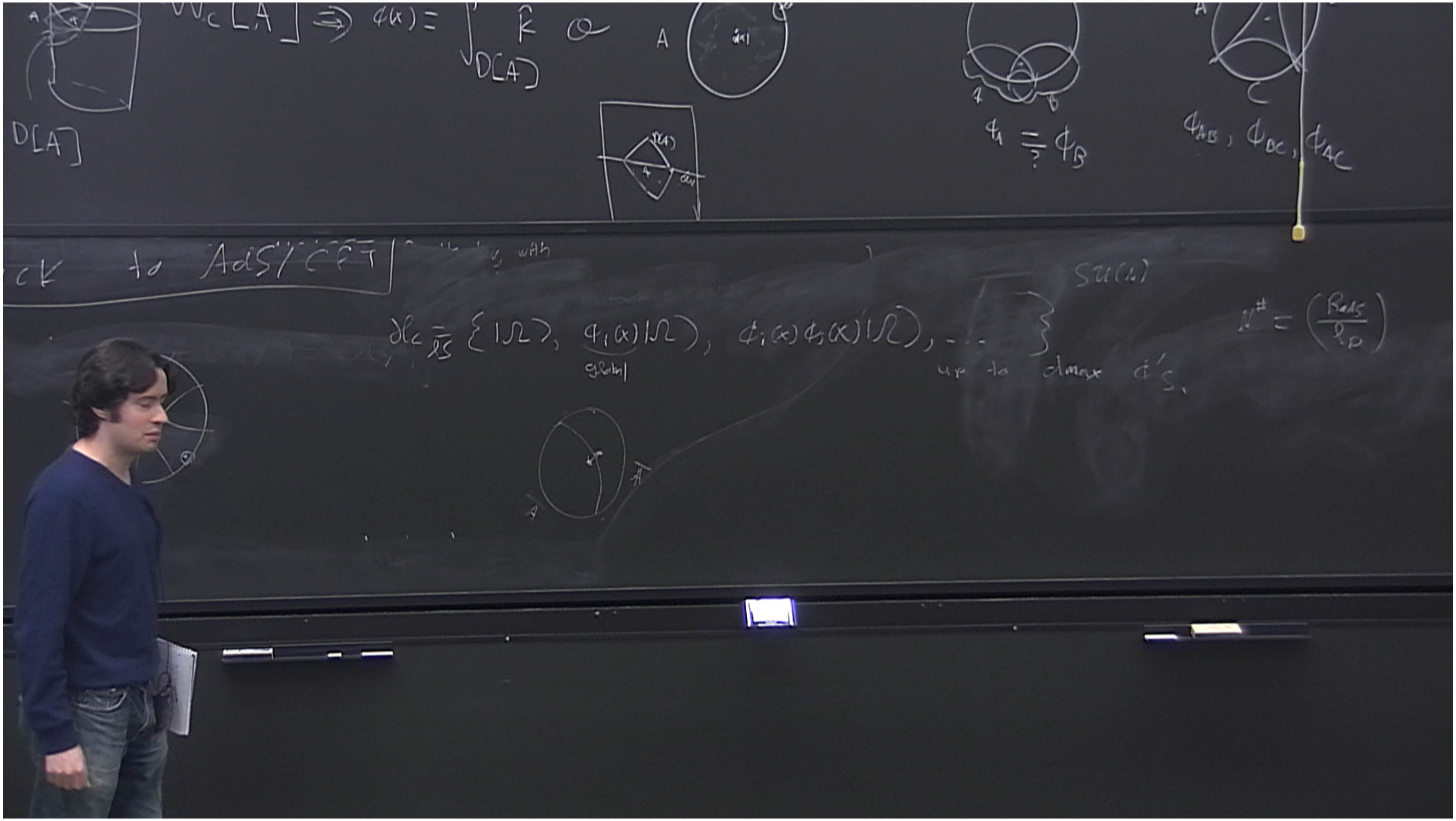

dim subspace
system.
collection E of l of the qubits.
1) Introduce a ref. system R (k qubits)
2) ∀ X_E acting E



$\Rightarrow$ 3) $\forall\ \mathcal{O}\ \exists\ \mathcal{O}_E$
s.t. $\mathcal{O}_E|\tilde{\Psi}\rangle = \tilde{\mathcal{O}}|\tilde{\Psi}\rangle$
$\mathcal{O}_E^\dagger|\tilde{\Psi}\rangle = \tilde{\mathcal{O}}^\dagger|\tilde{\Psi}\rangle$




A
to AdS/CFT
SU(N)


D[A]
AdS/CFT
SU(N)
up to dmax