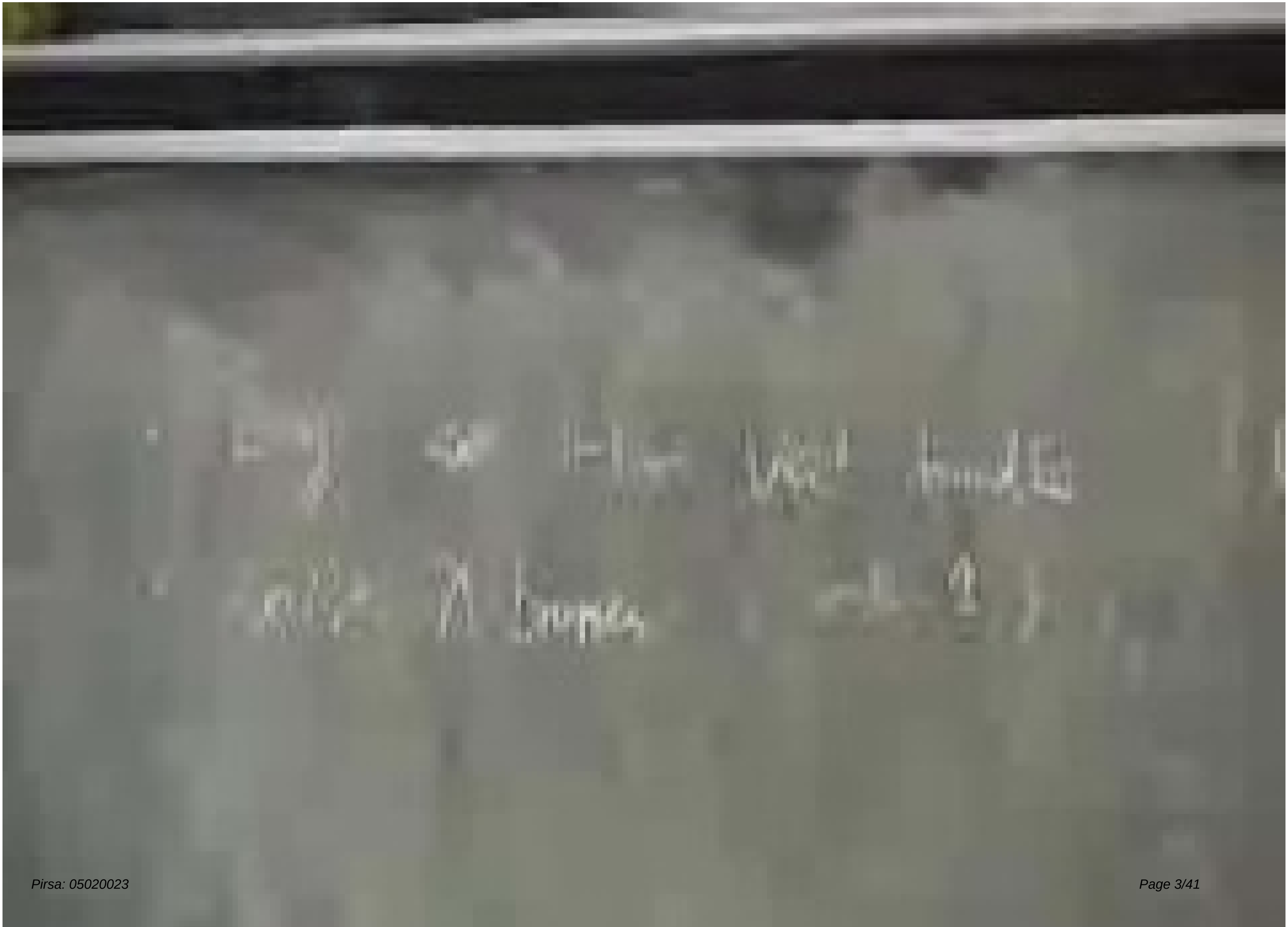
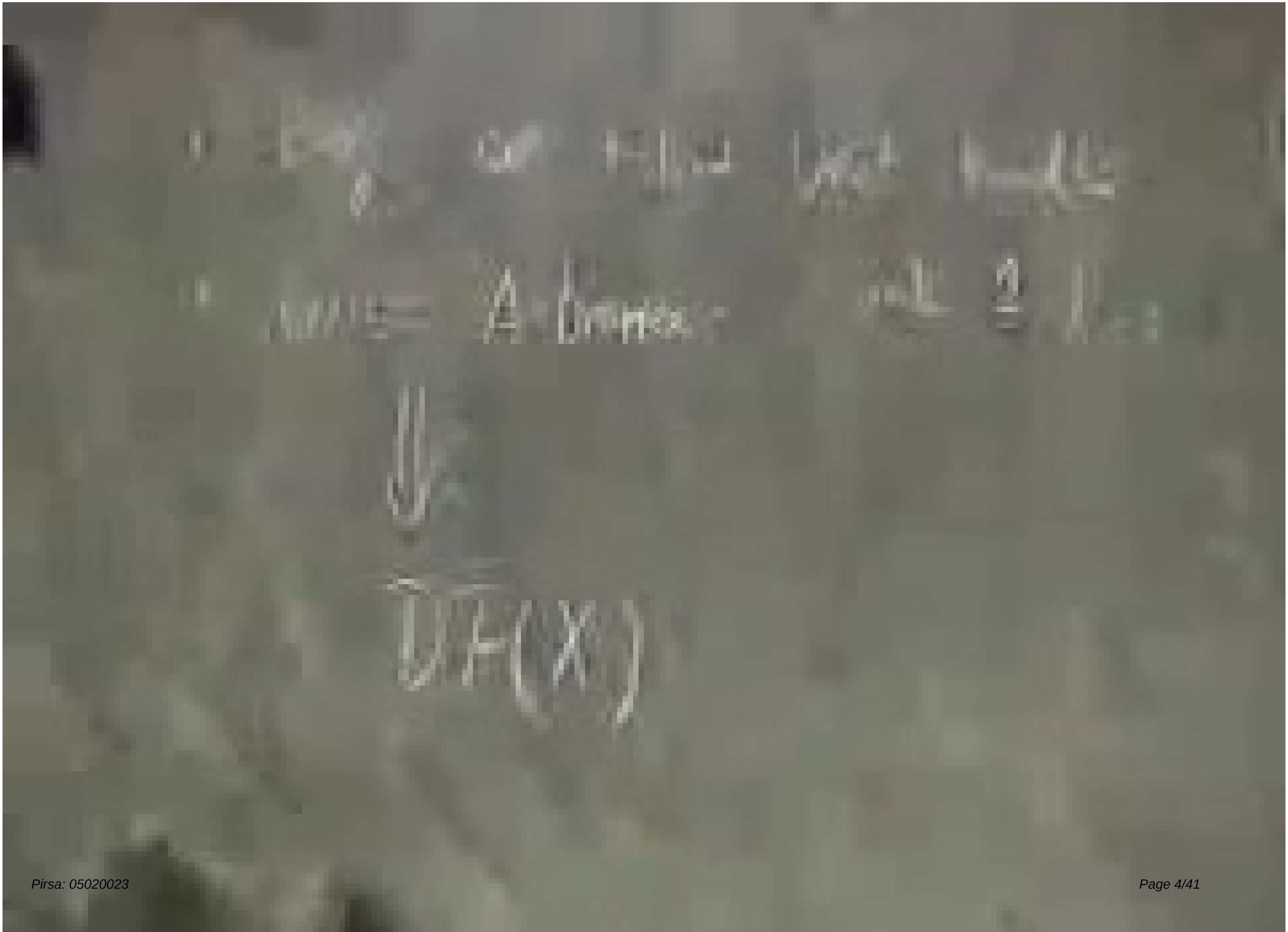
Title: Twisted Generalized Calabi-Yau Manifolds and Topological Sigma Models with Flux (Part 3)

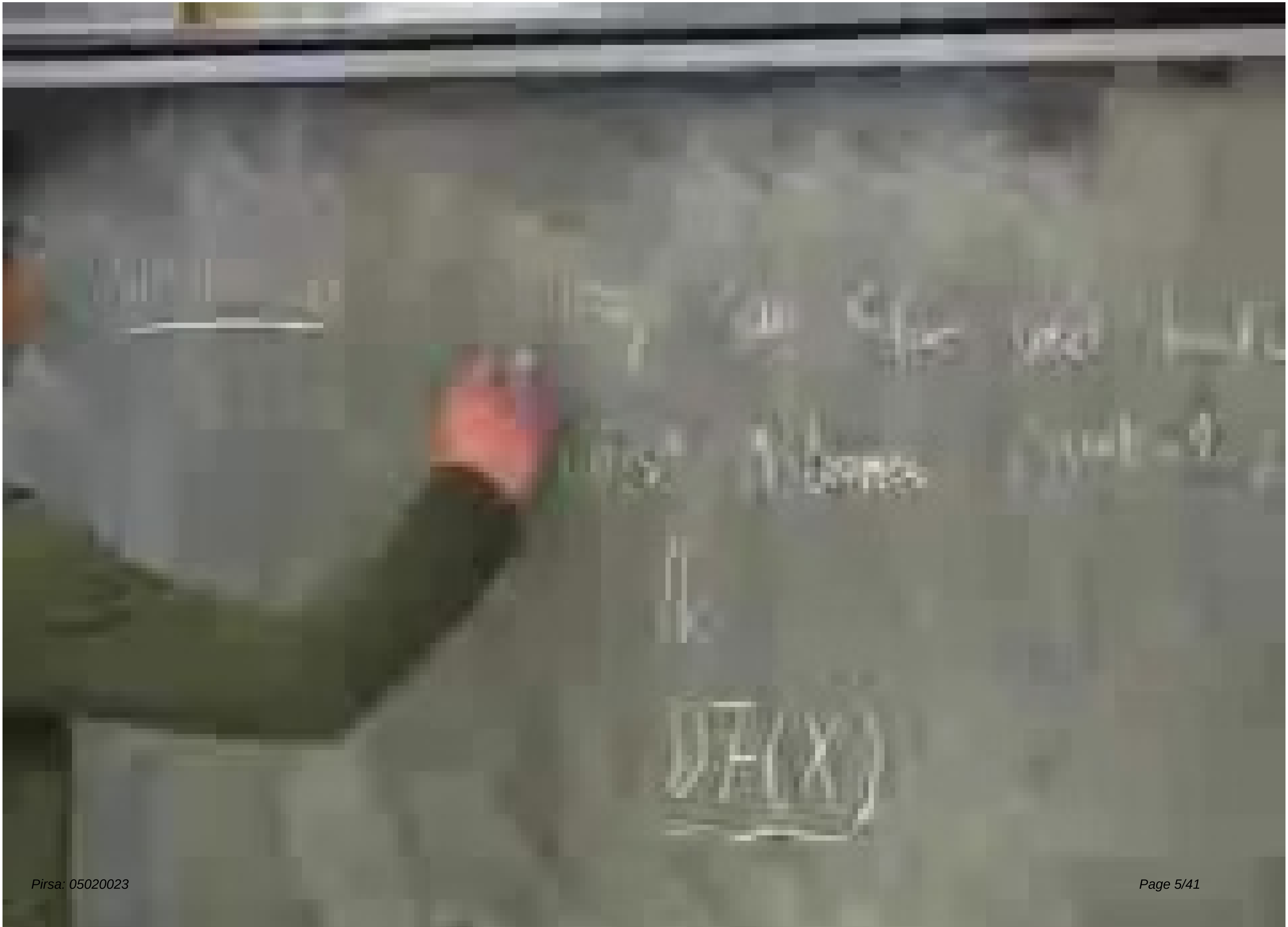
Date: Feb 17, 2005 02:00 PM

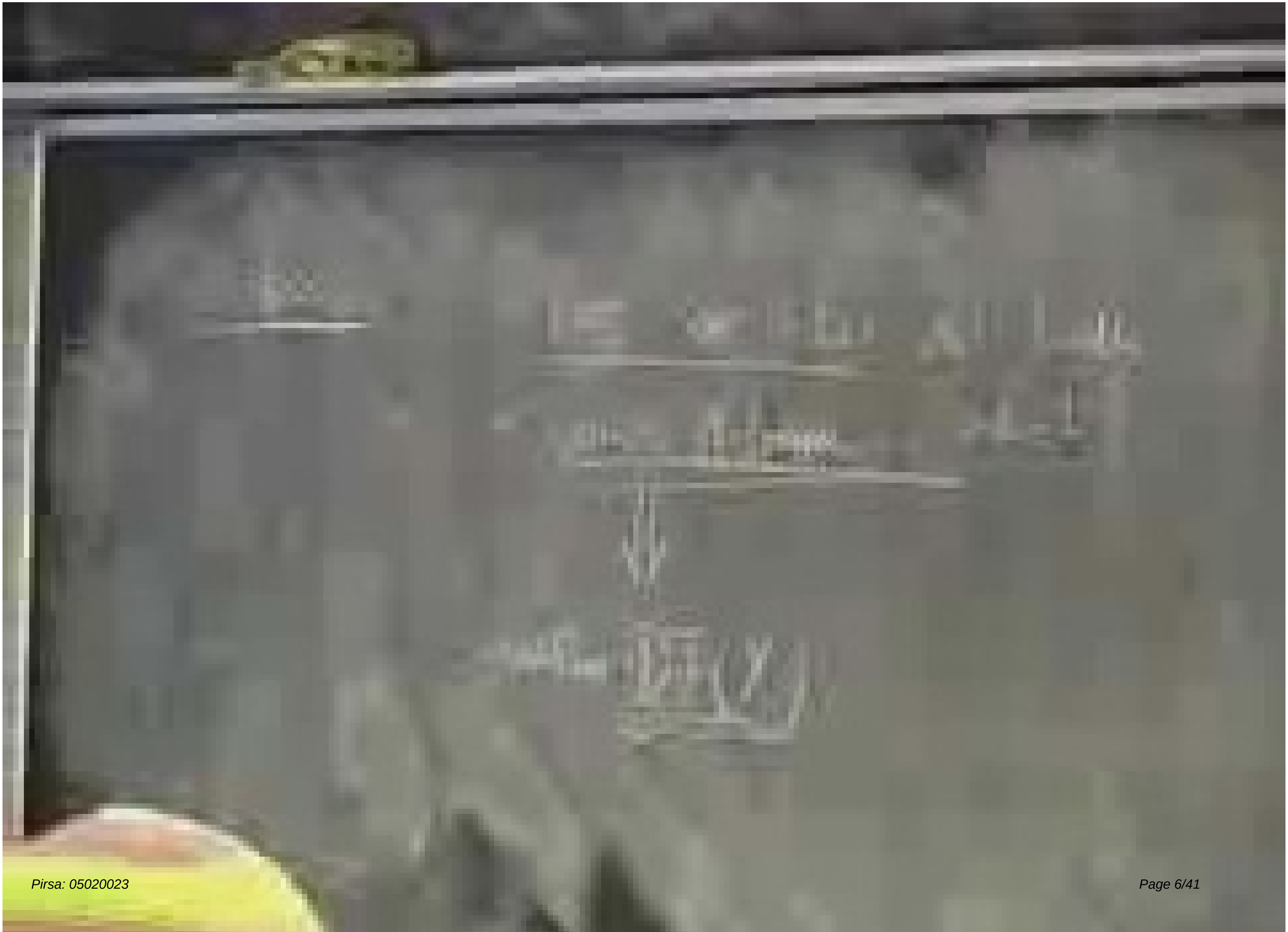
URL: http://pirsa.org/05020023

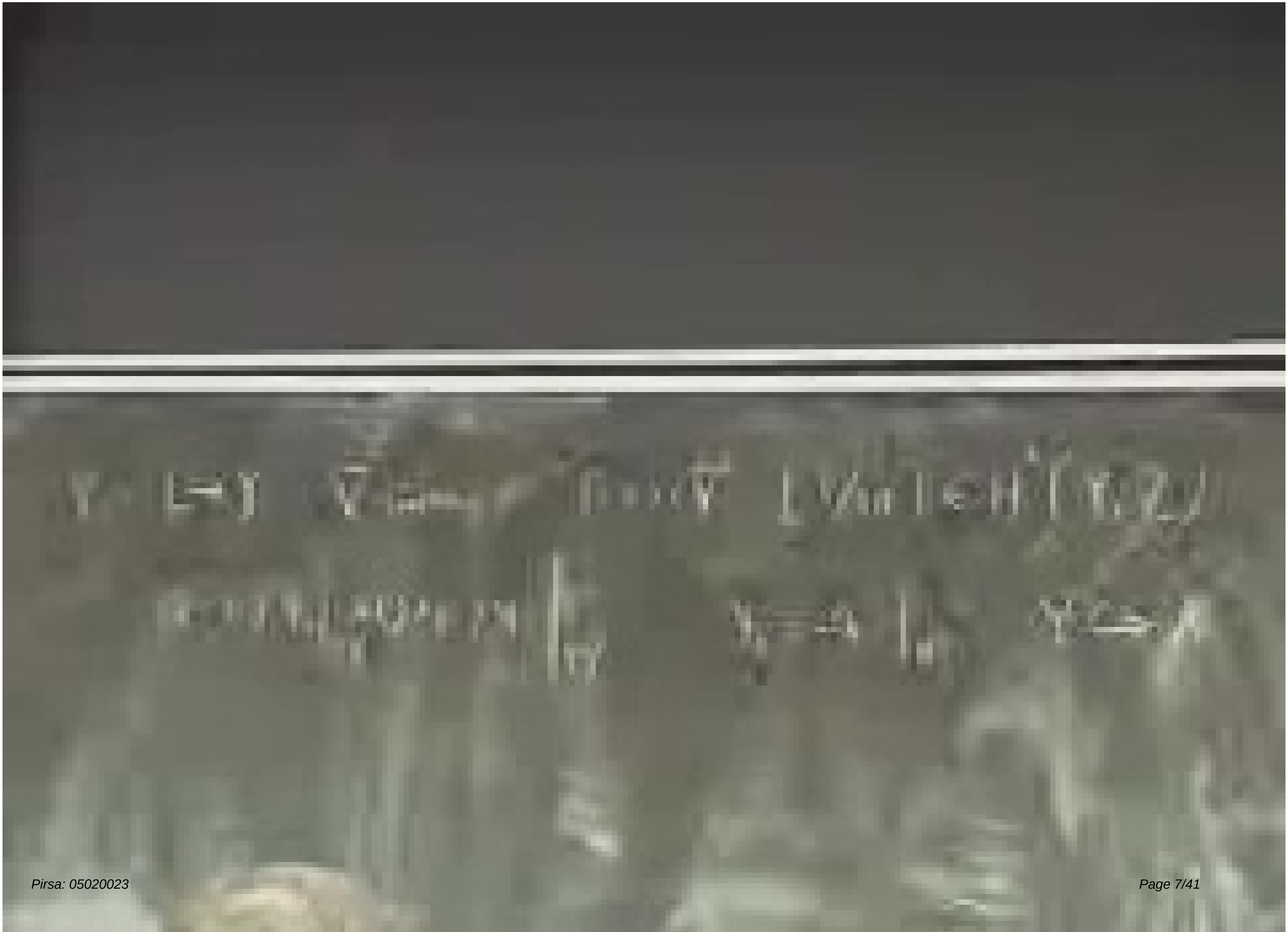
Abstract: In these lectures, we examine how twisted generalized Calabi-Yau (GCY) manifolds arise in the construction of a general class of topological sigma models with non-trivial three-form flux. The topological sigma model defined on a twisted GCY can be regarded as a simultaneous generalization of the more familiar A-model and B-model. Emphasis will be given to the relation between topological observables of the sigma model and a Lie algebroid cohomology intrinsically associated with the twisted GCY. If time permits, we shall also discuss topological D-branes in this more general setting, and explain how the viewpoint from the Lie algebroid helps to elucidate certain subtleties even for the conventional A-branes and B-branes. The lectures will be physically motivated, although I will try to make the presentation self-contained for both mathematicians and physicists.







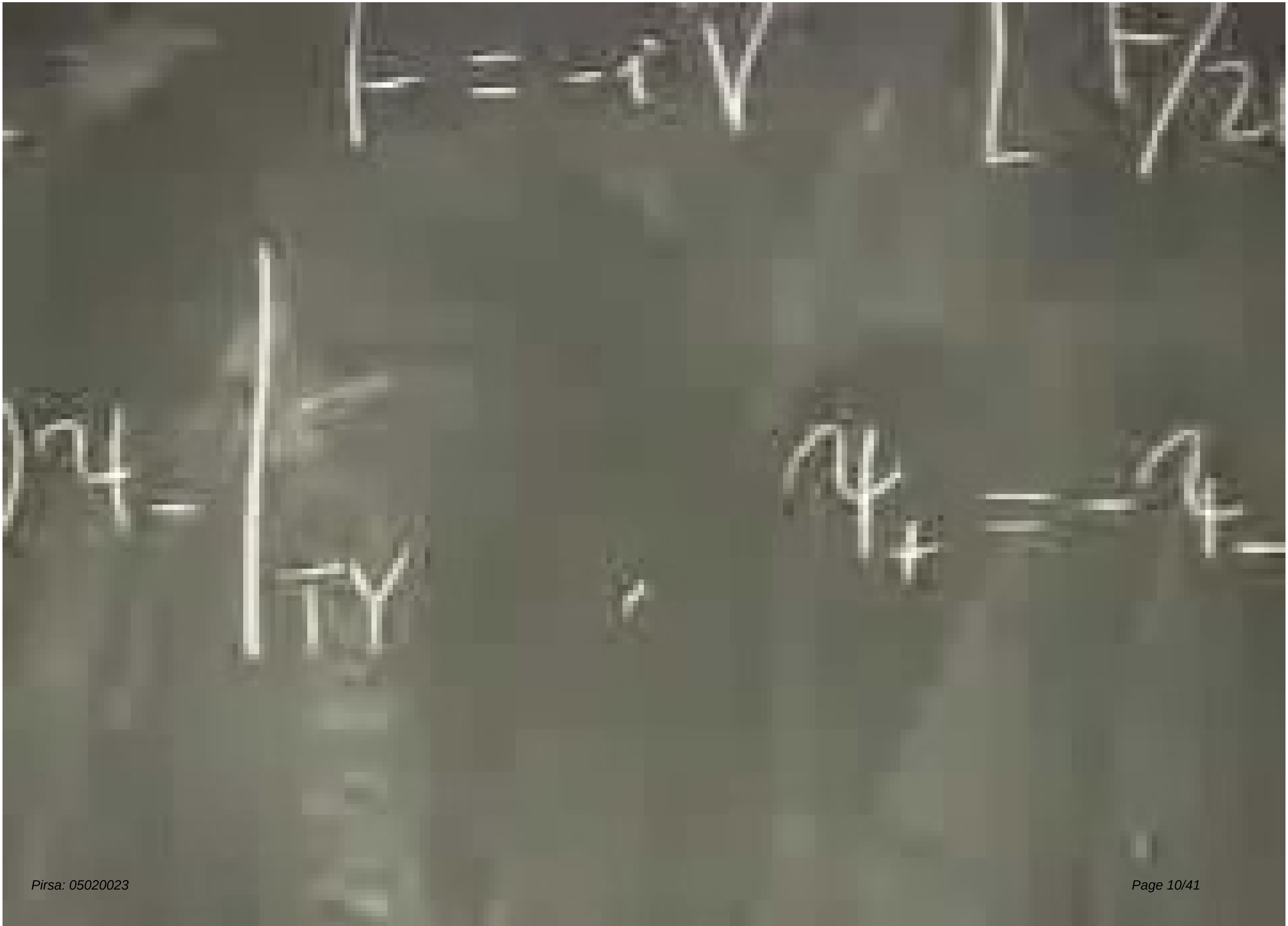


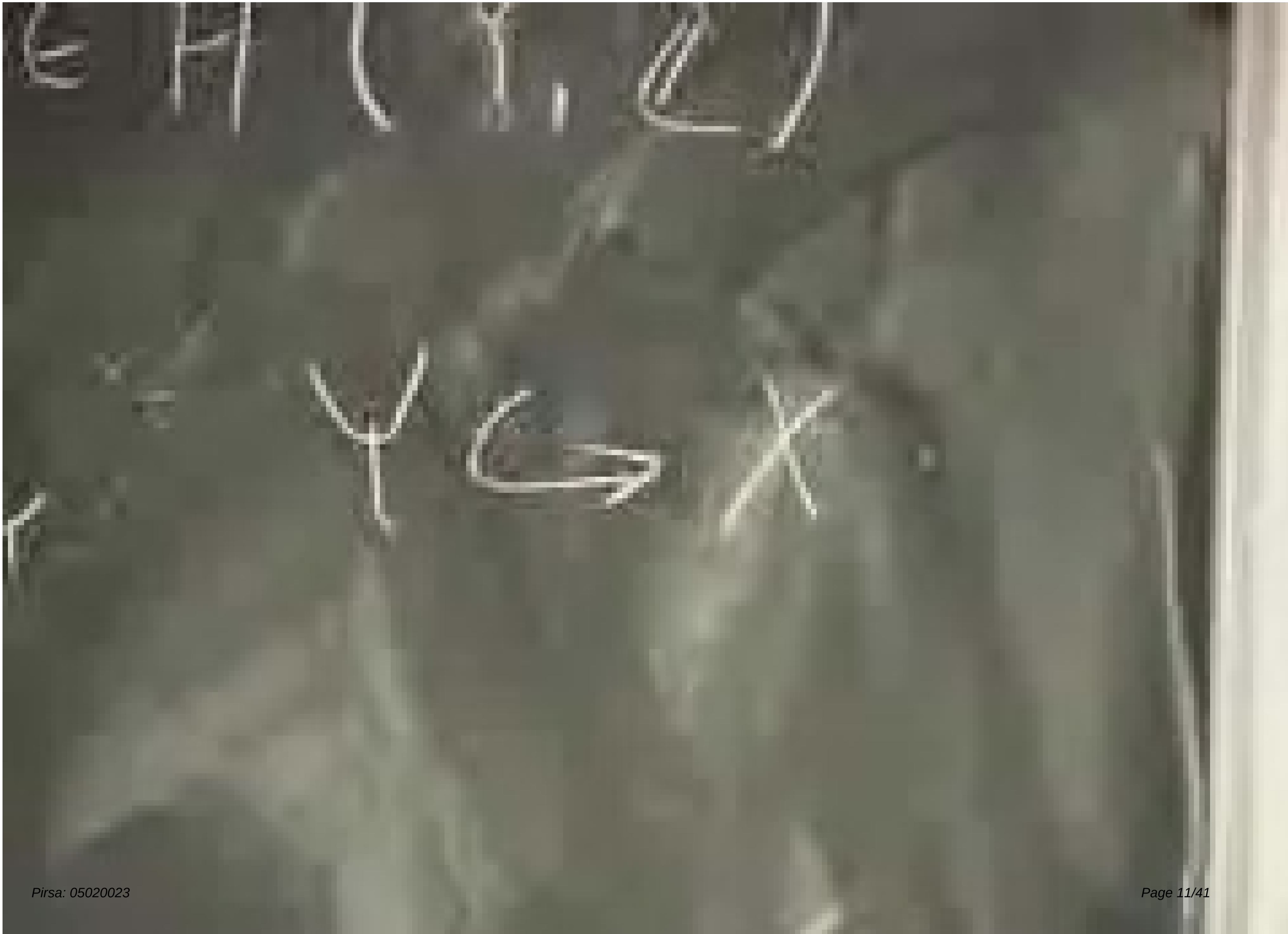


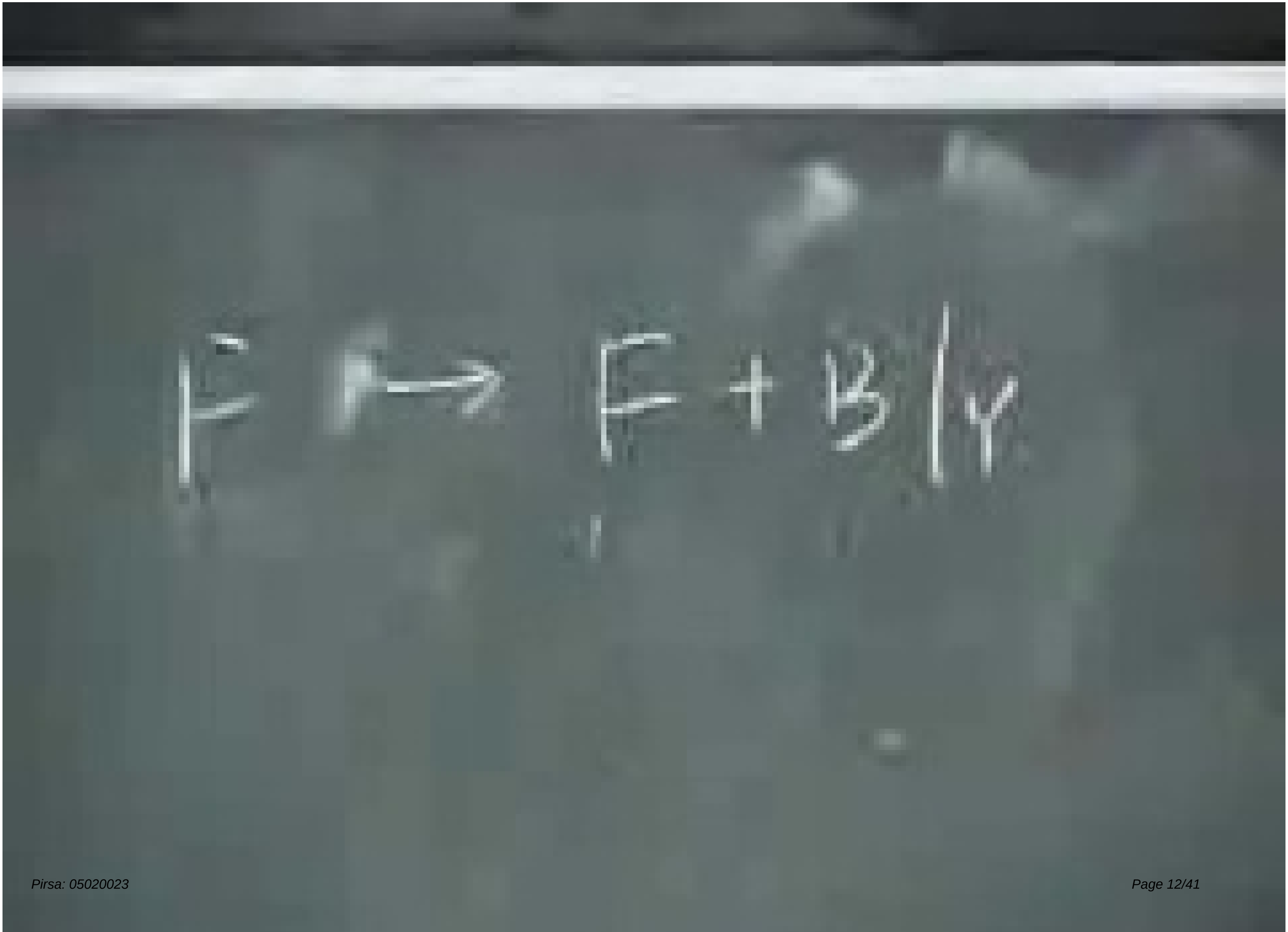
$$(\not{\partial} - E)\,\psi_+\Big|_{TY} = (\not{\partial} + E$$

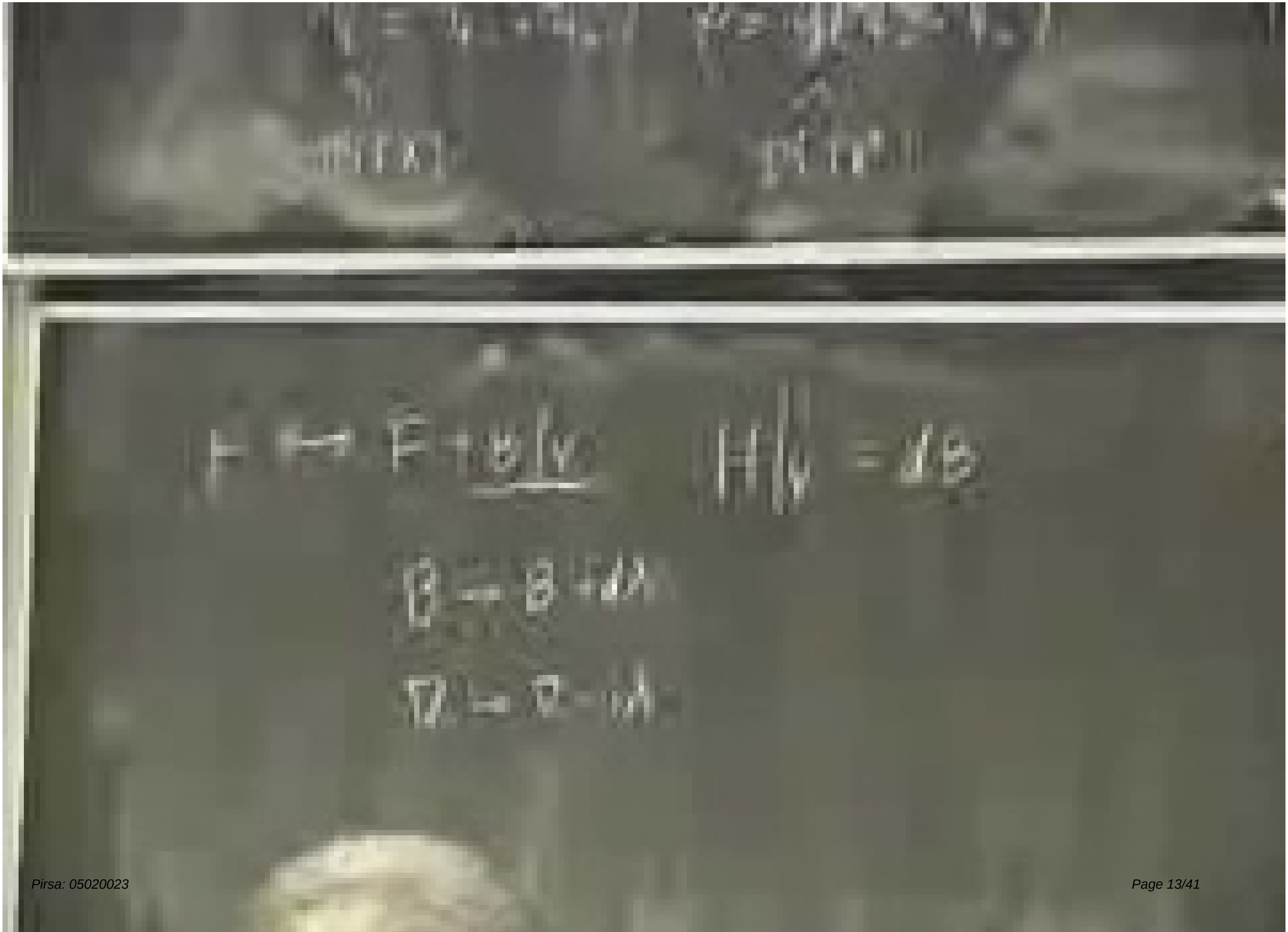
$Y, \quad L \to Y, \quad V$ unita

$$(g \cdot F)\psi_+\Big|_{-iY} = (g \cdot F$$




∈ H(Y, Z)
Y ↪ X

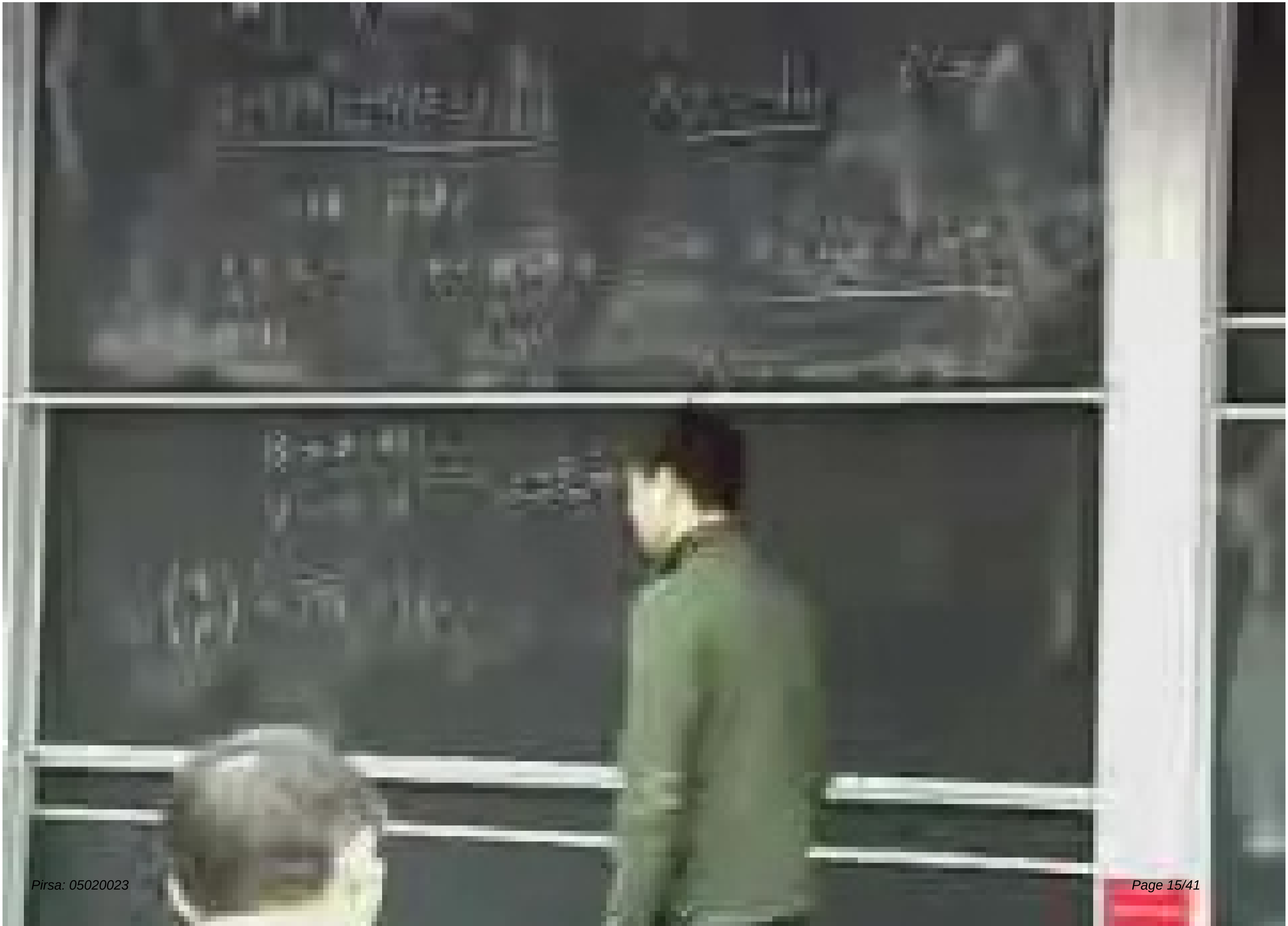

F ↦ F + B|Y

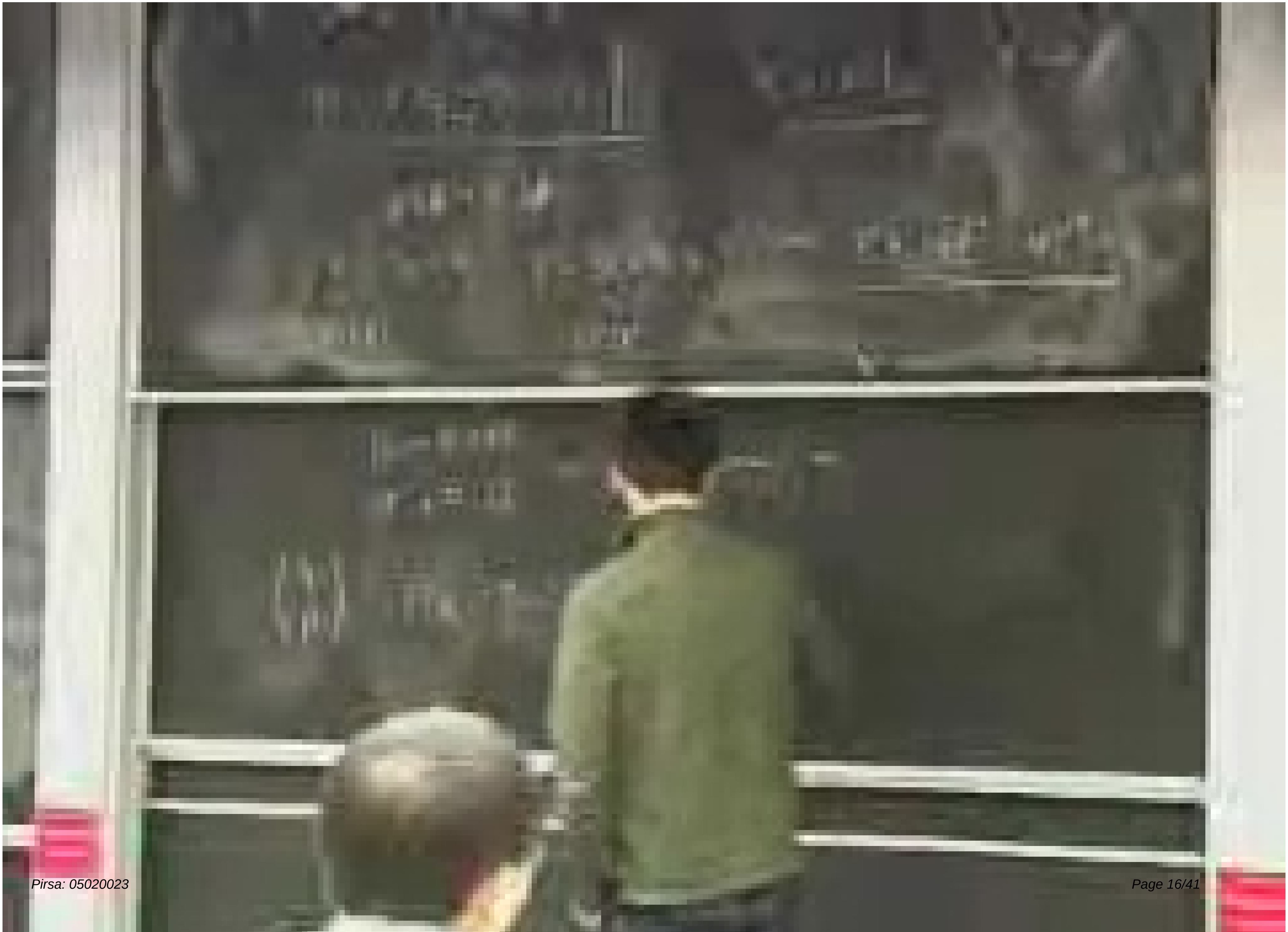


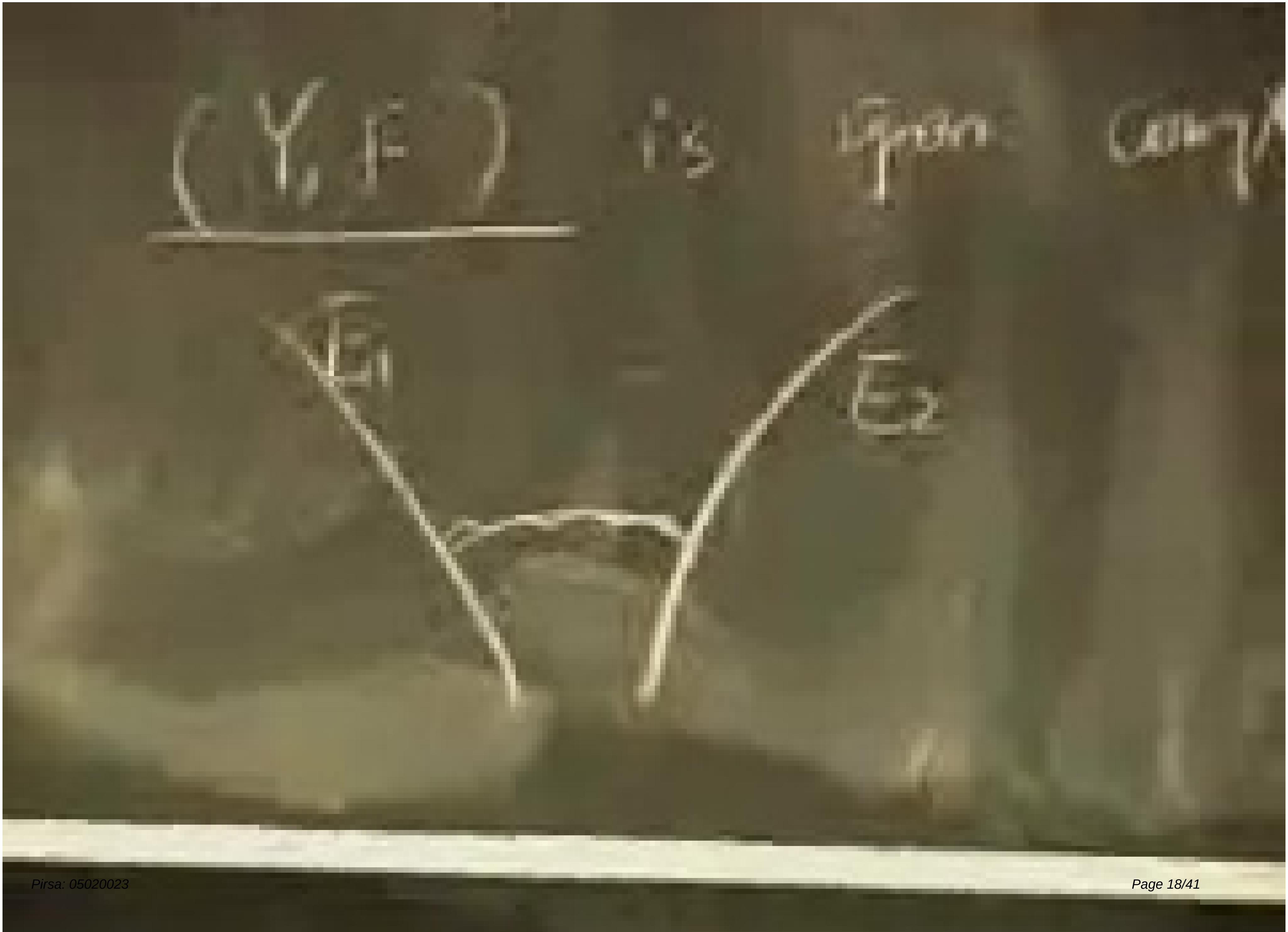
$$B \to B + d\lambda$$

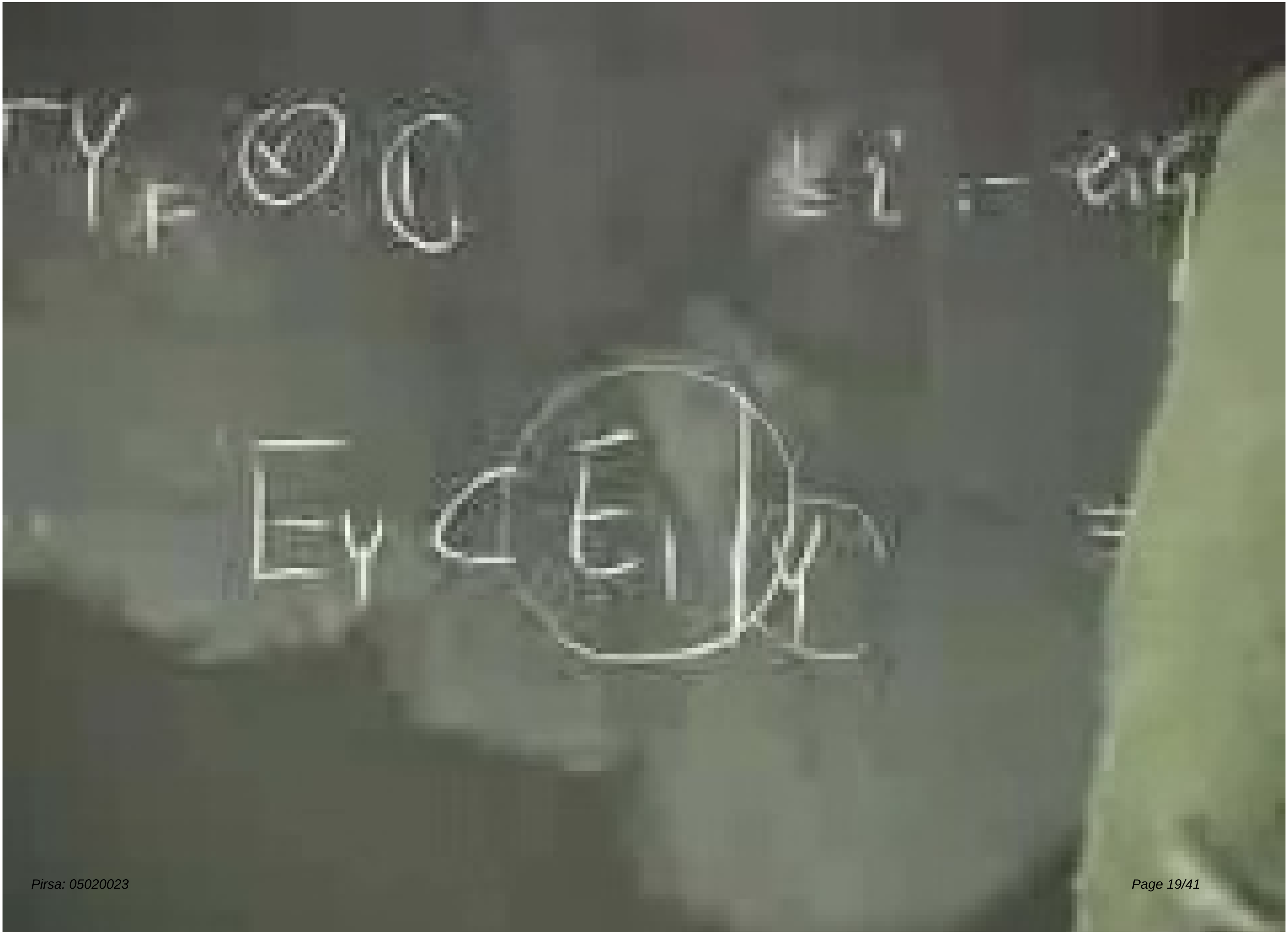
$$\nabla \to \nabla + d\lambda \quad \Rightarrow F$$

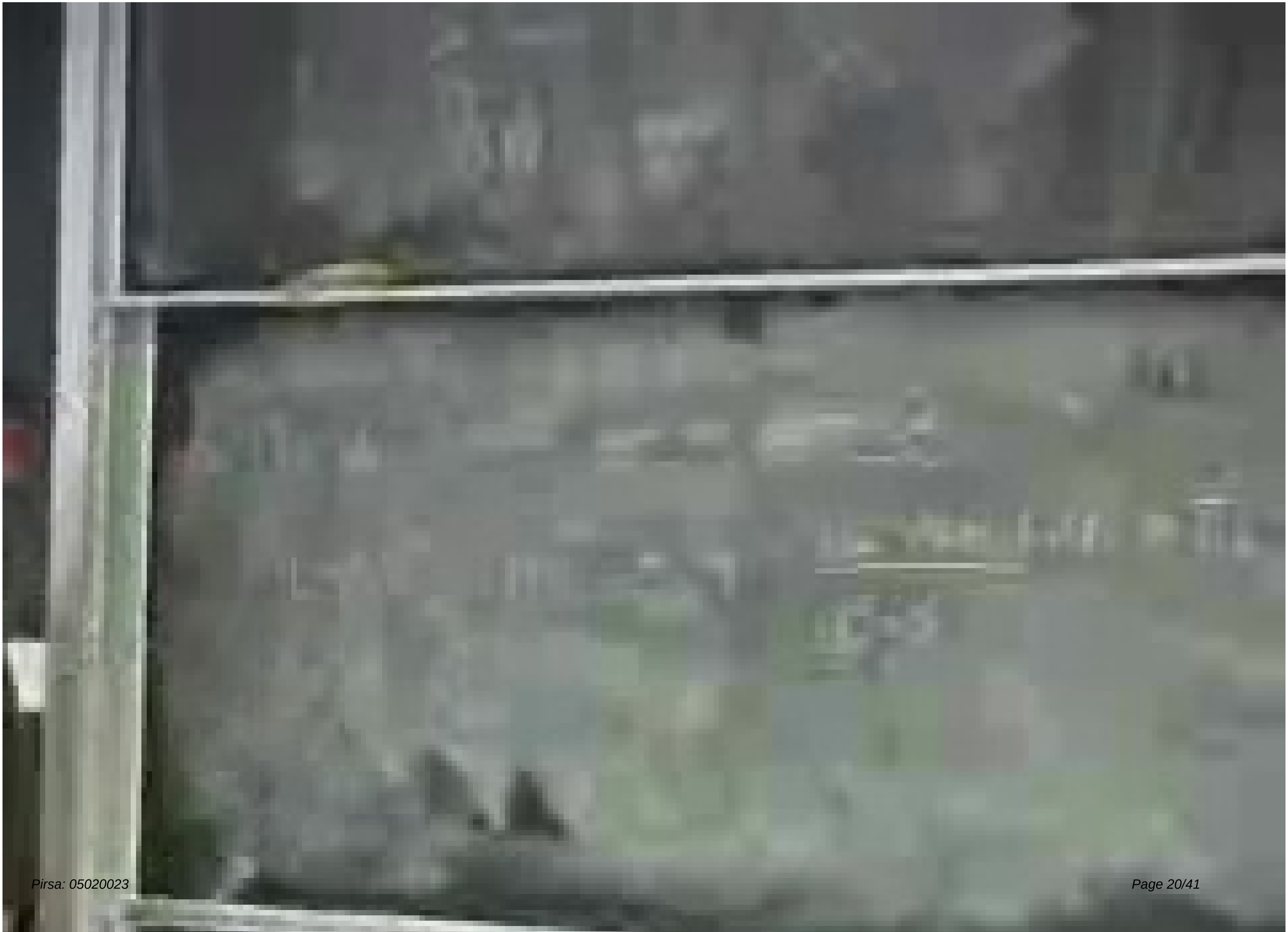
$$\begin{pmatrix} \eta \\ \rho \end{pmatrix} \in TY_E \left(\Sigma_{4,F} \right)$$

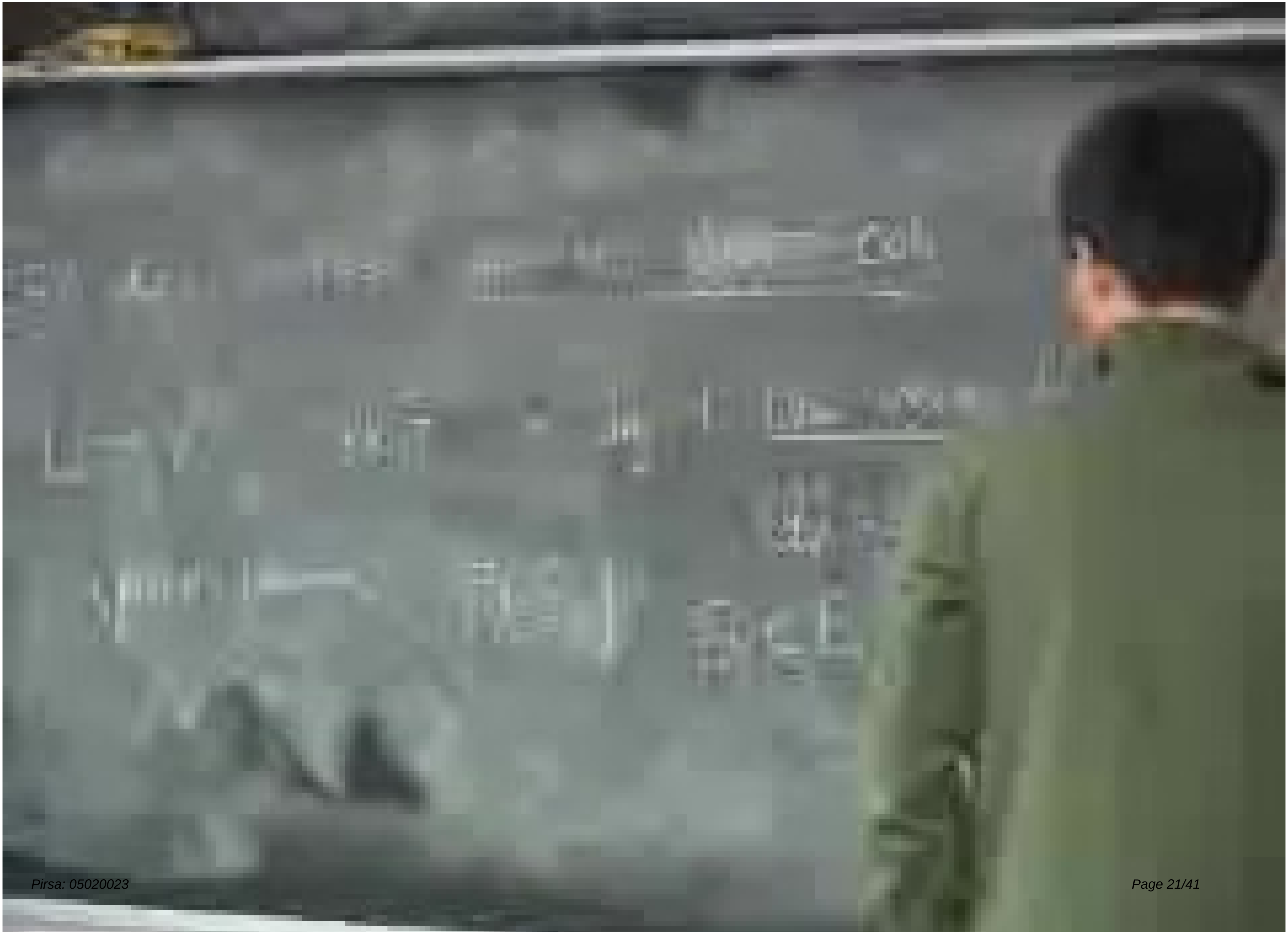


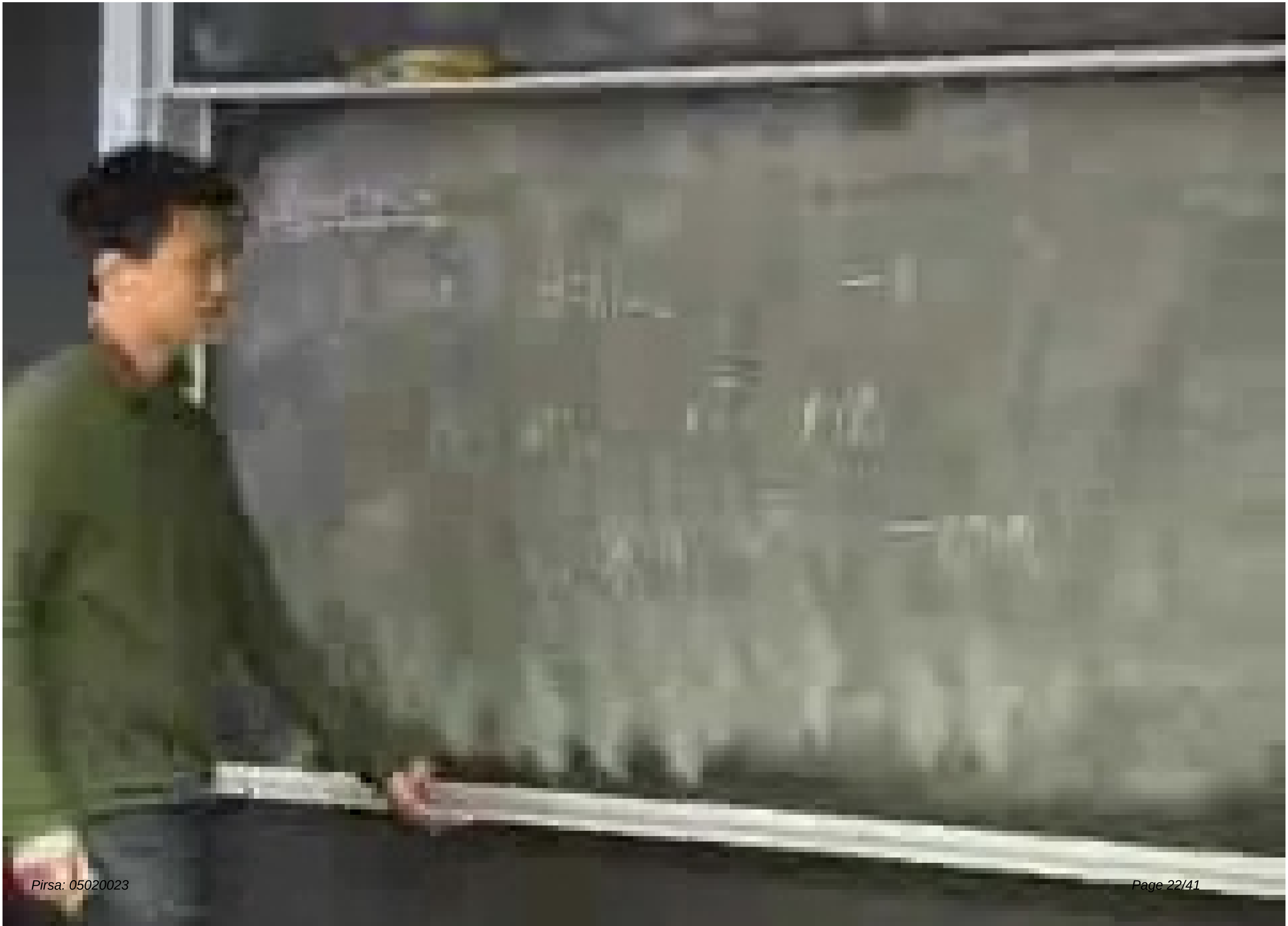


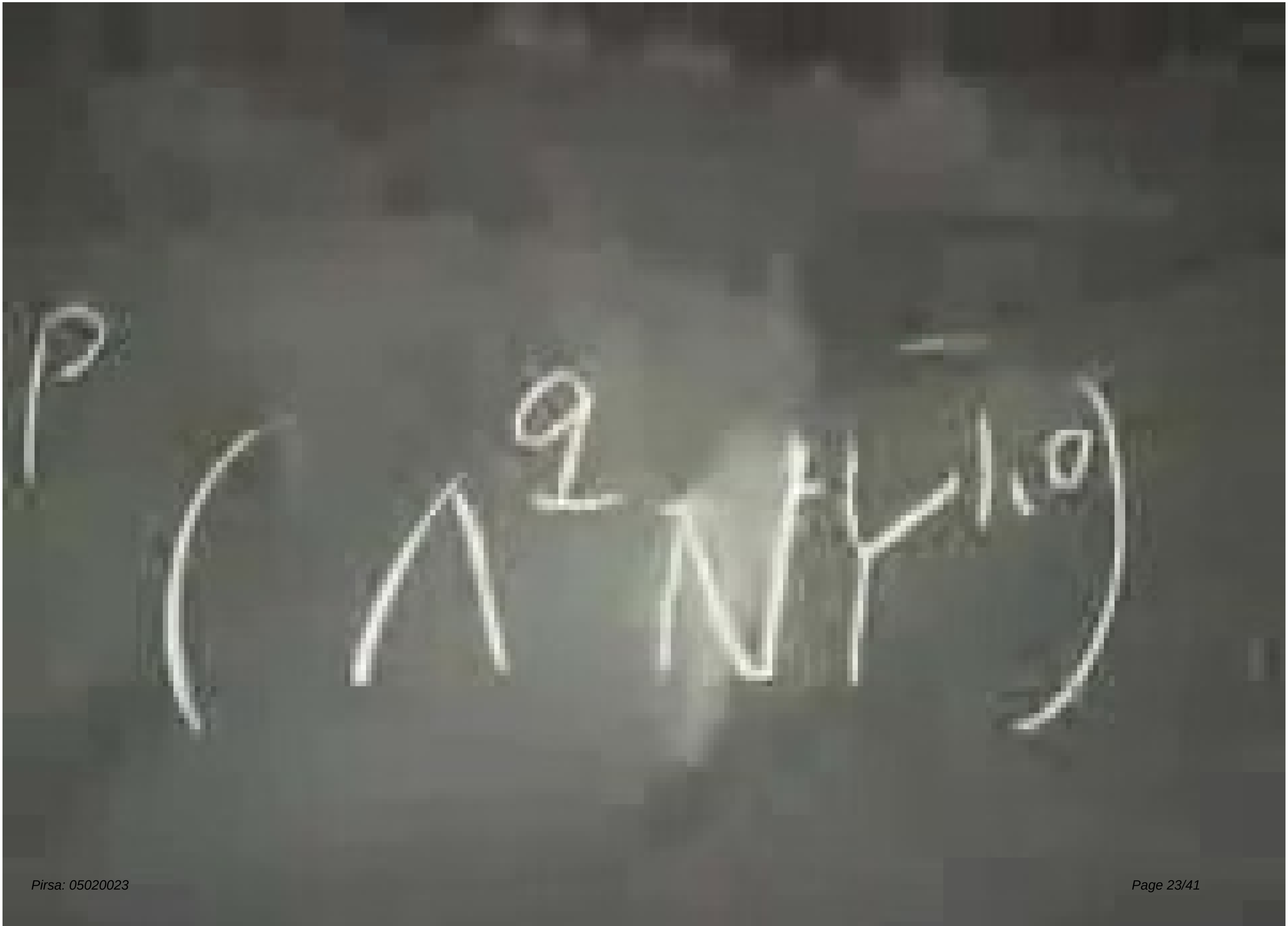

(Y, F) is
E1
E2









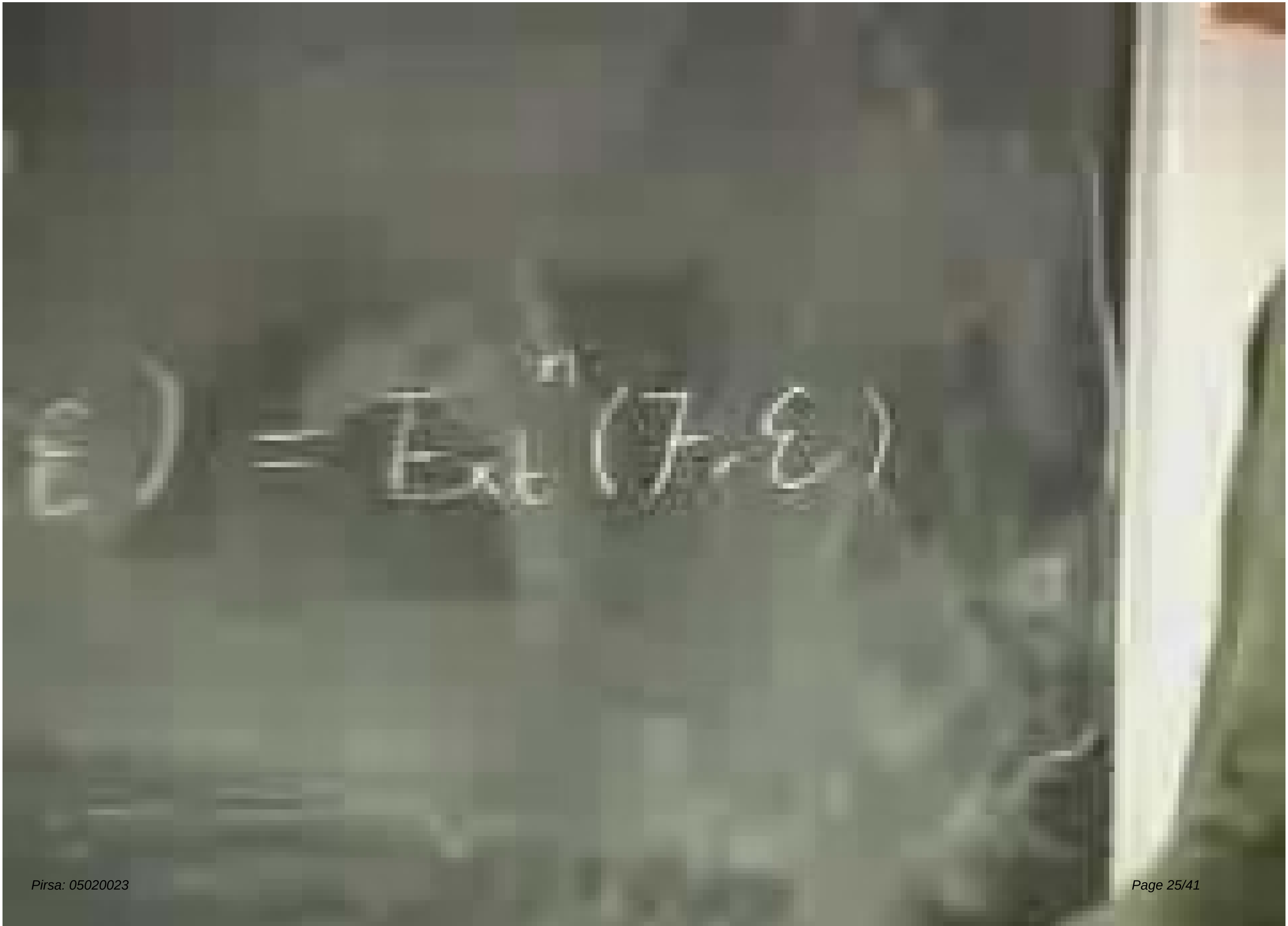


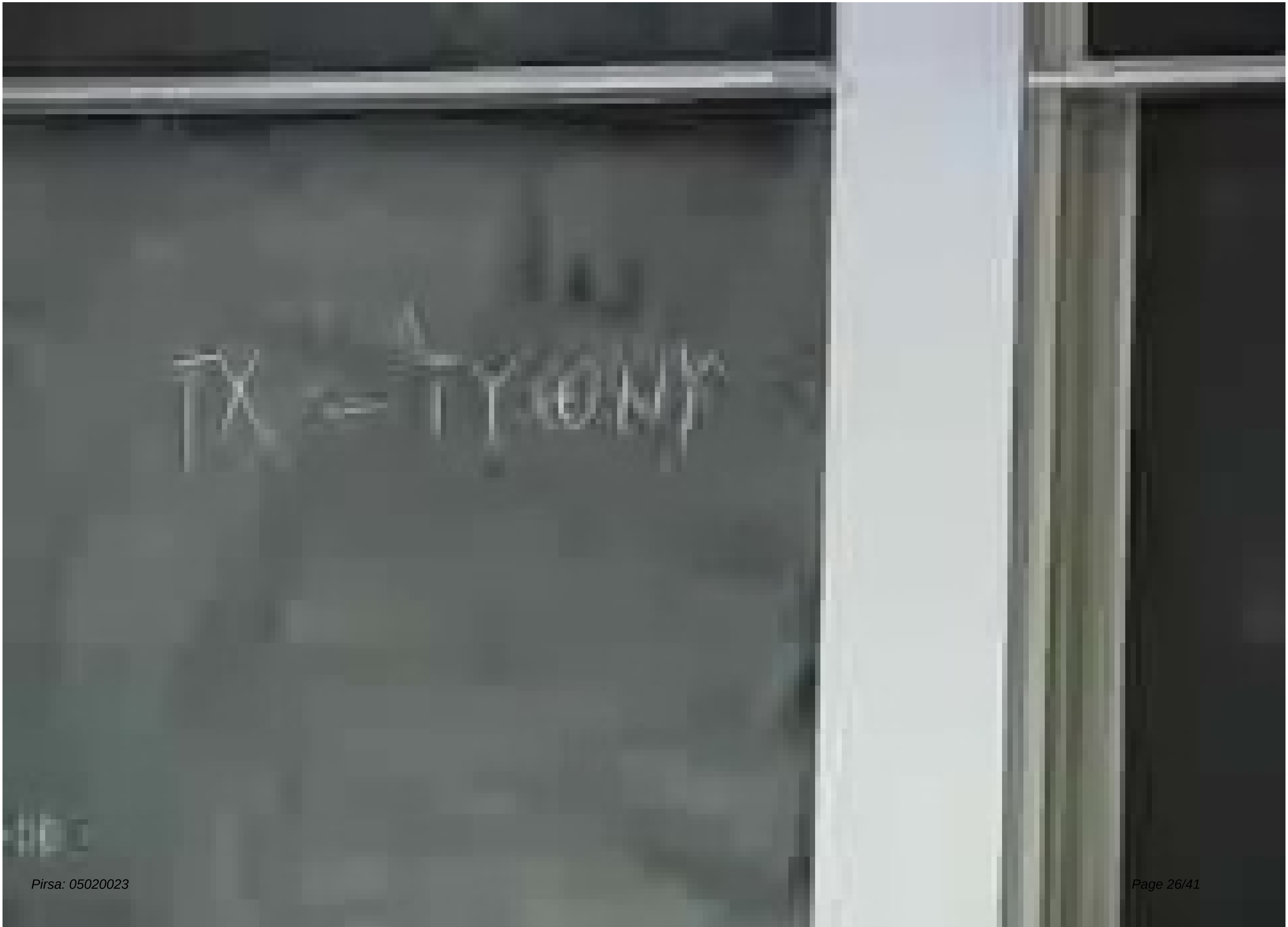
$= H(X, N)$

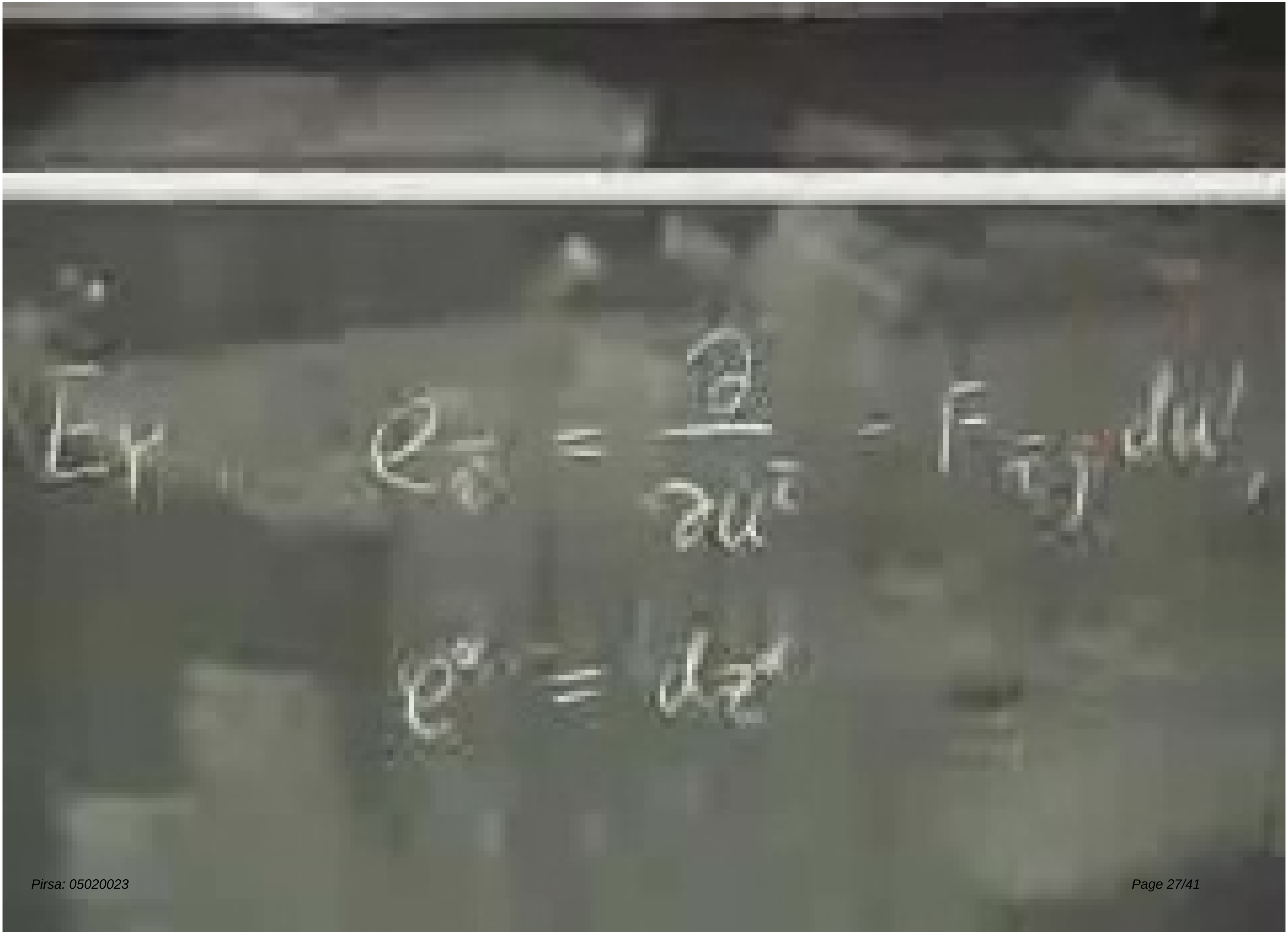
$\mathbb{X}$

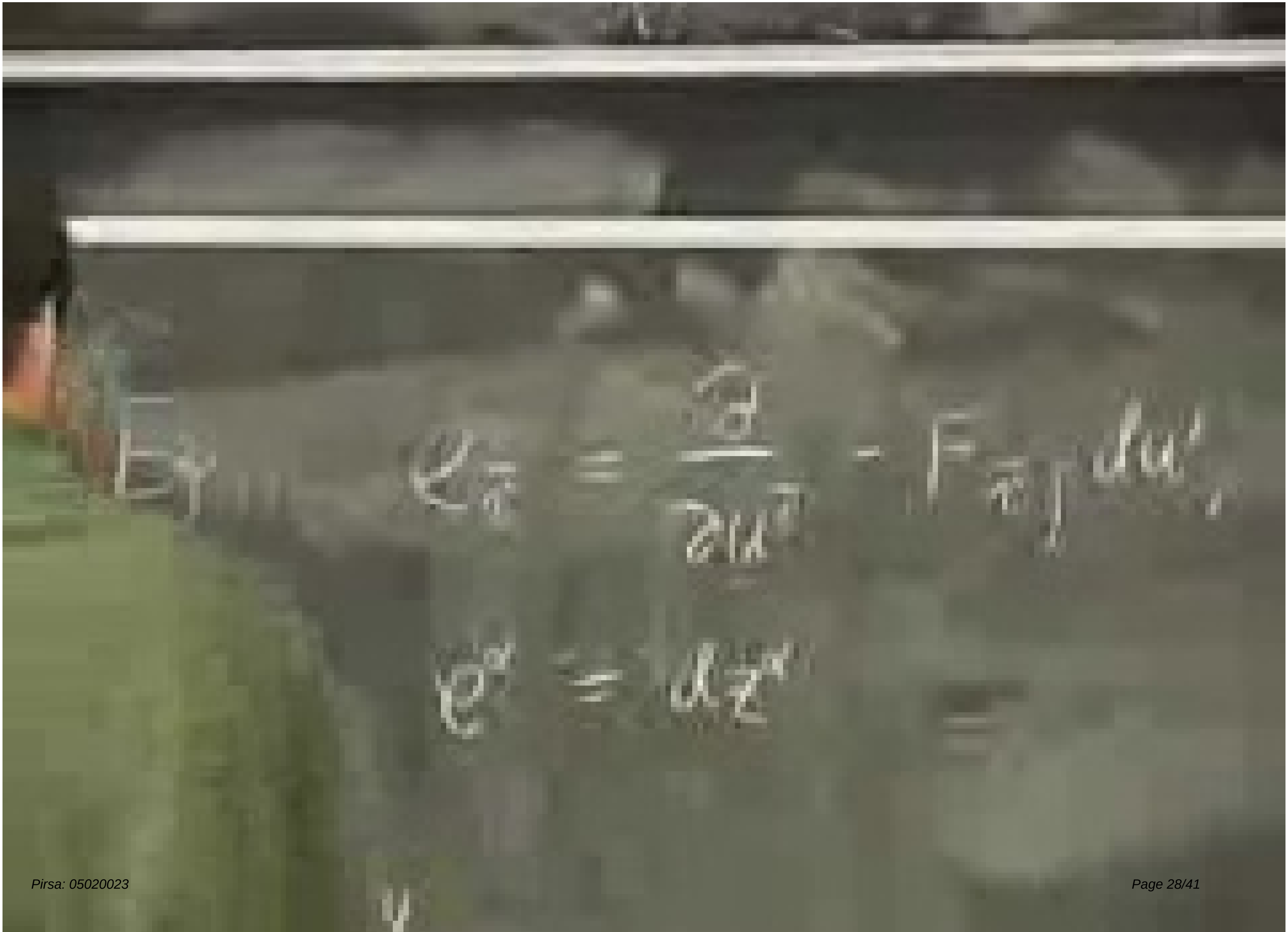
Ext^{p+q}

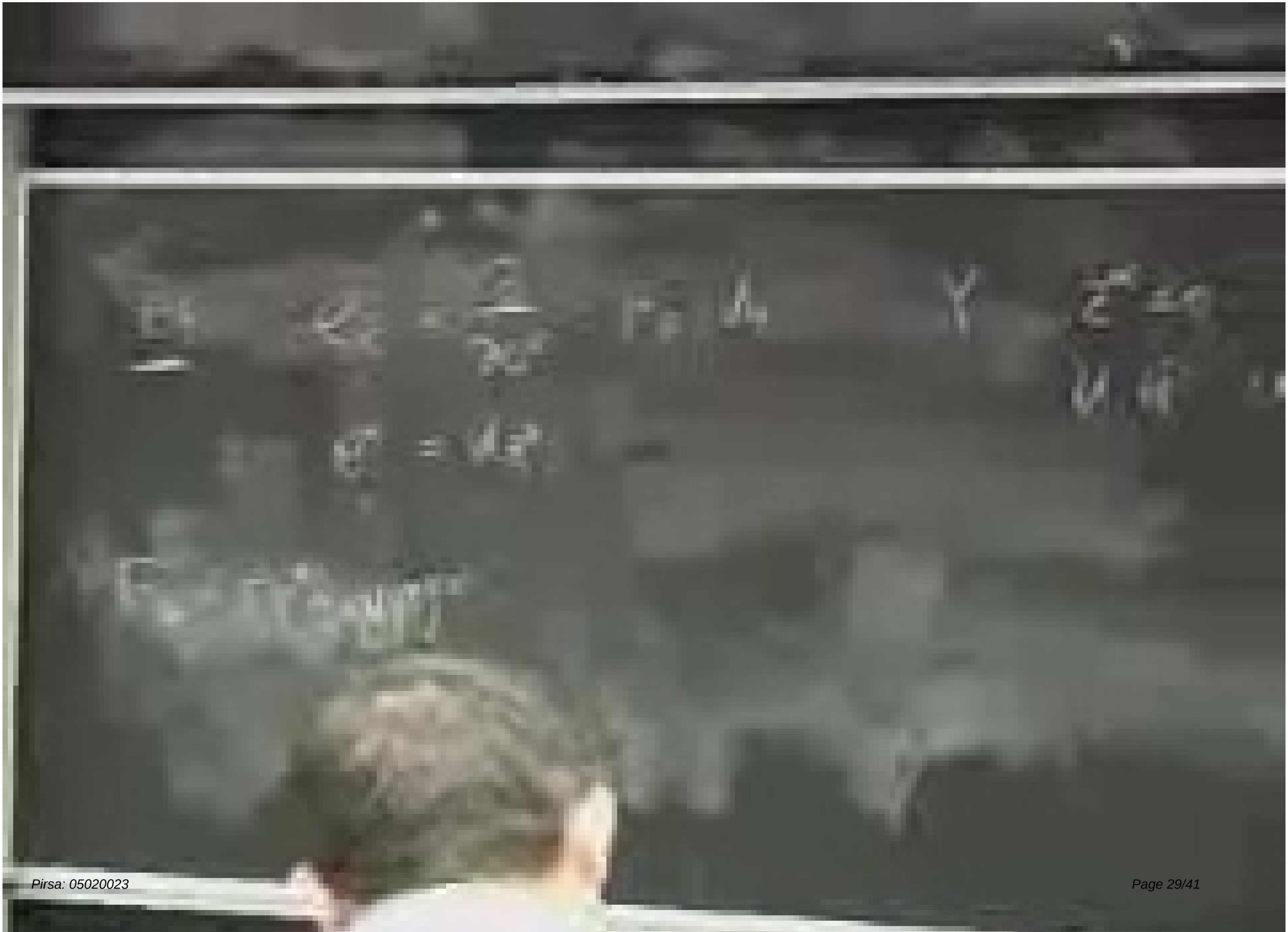
$R^n \mathrm{Hom}(\mathcal{F}, \mathcal{E})$

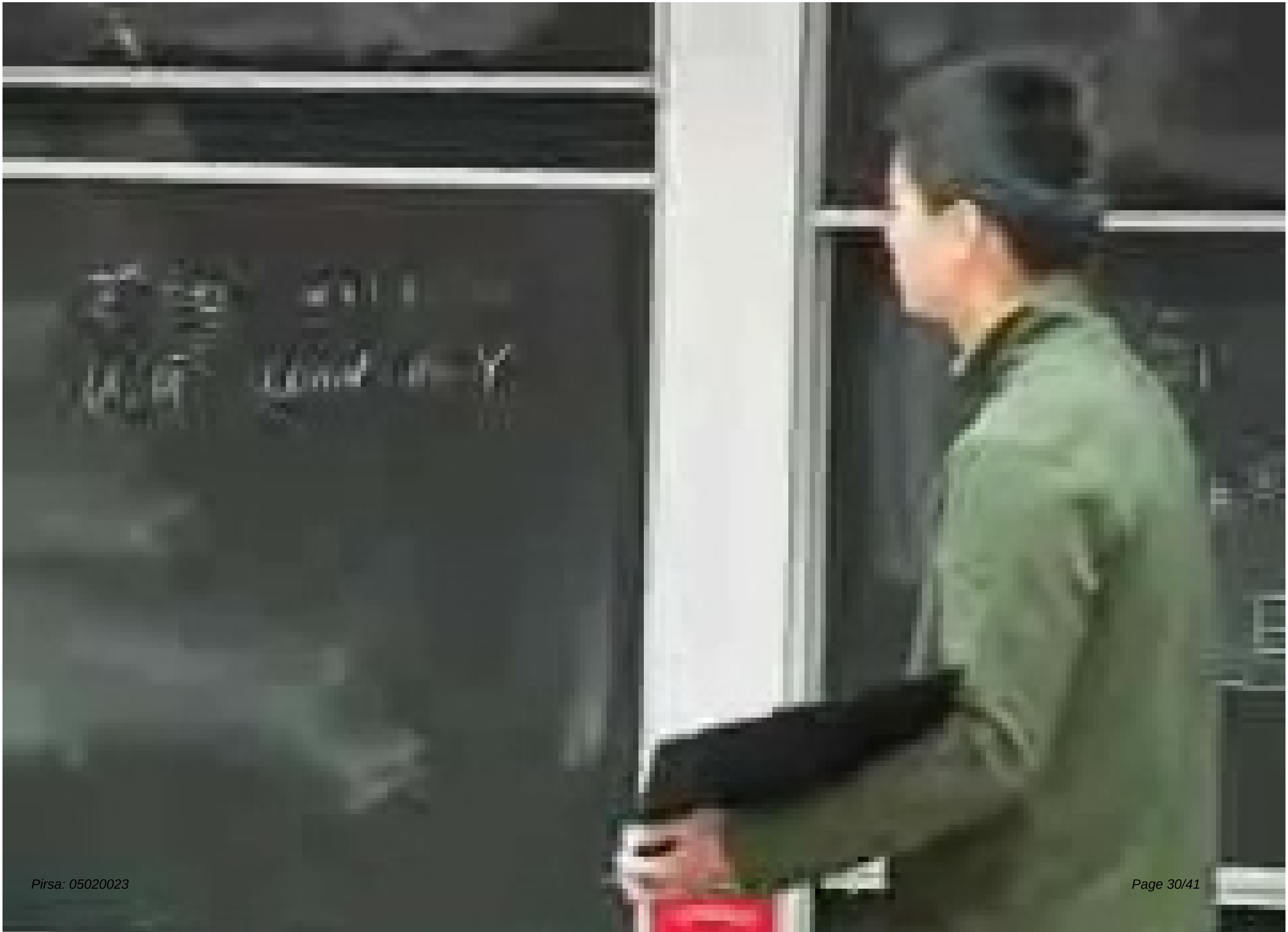


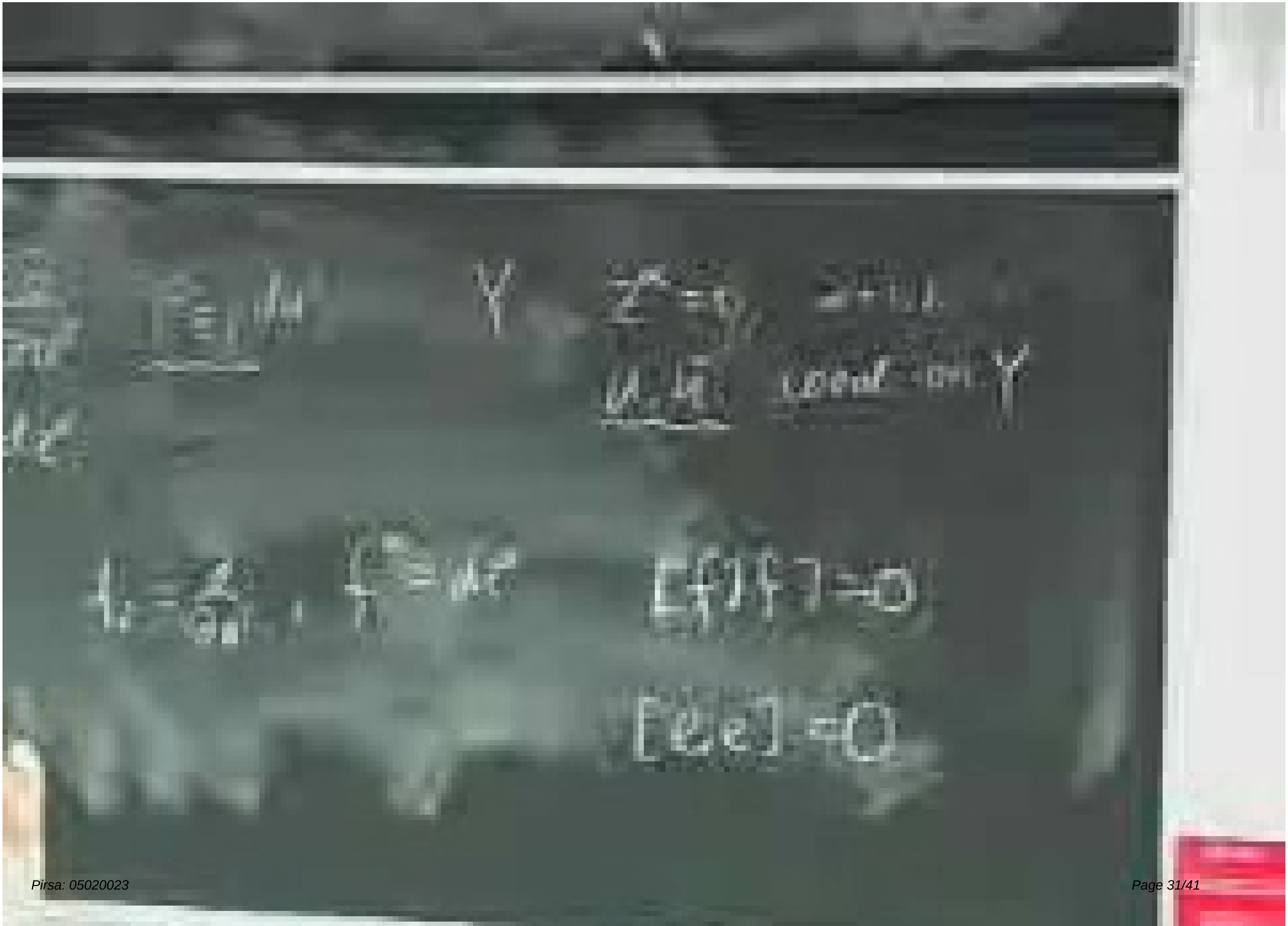


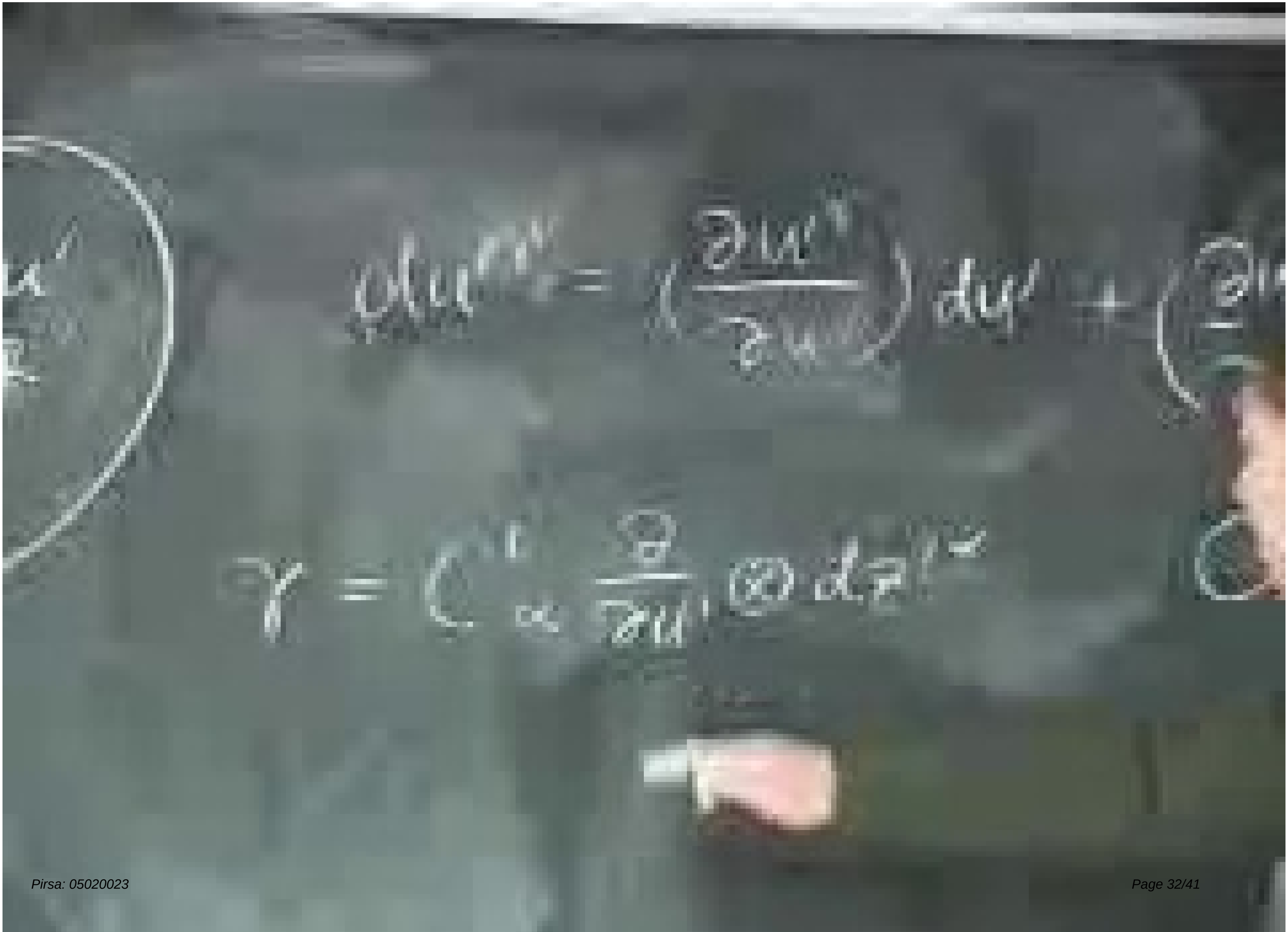

Ex.
e_i = ∂/∂u^i = F_ij du^j,
e^a = dz^a

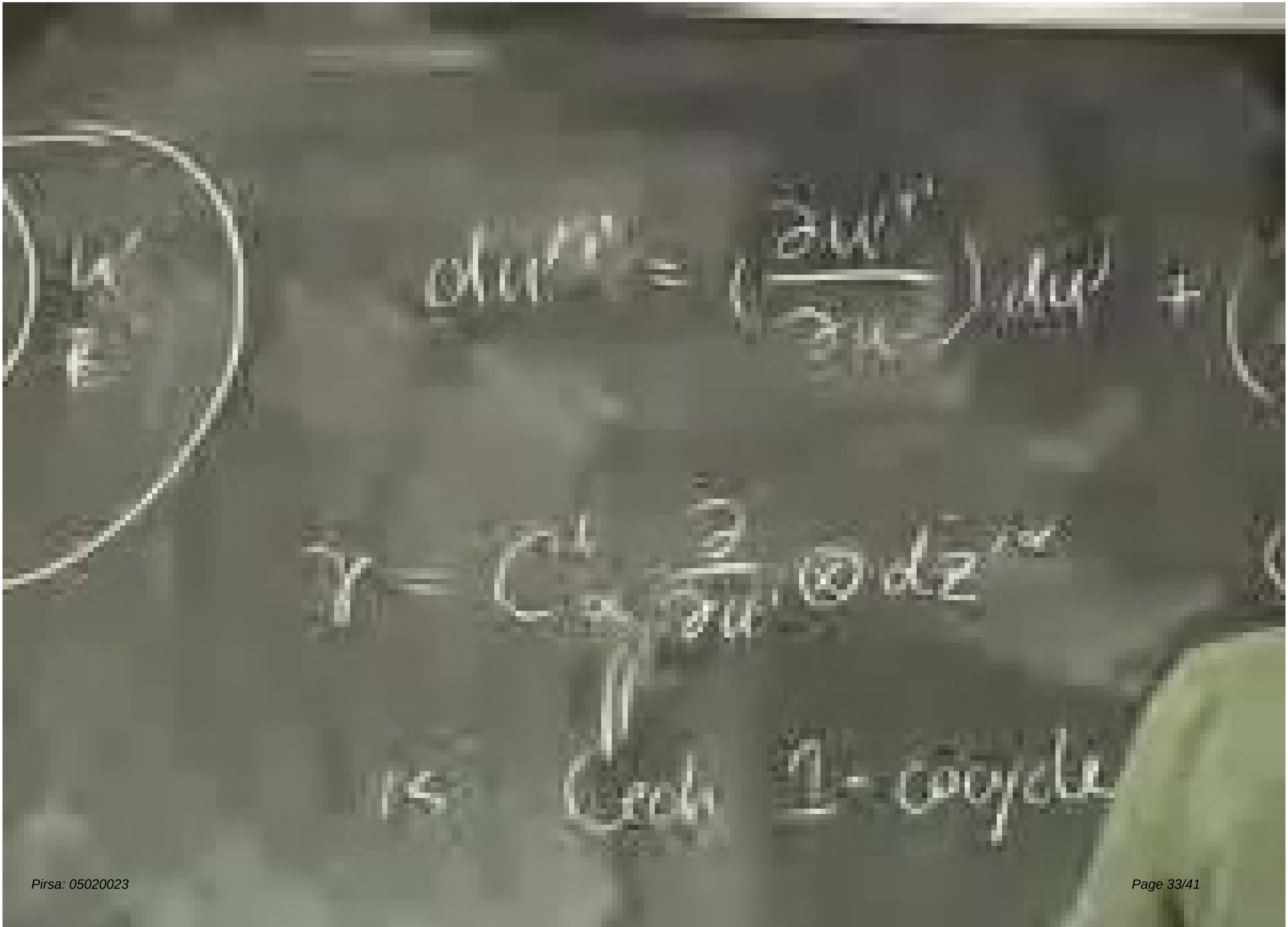


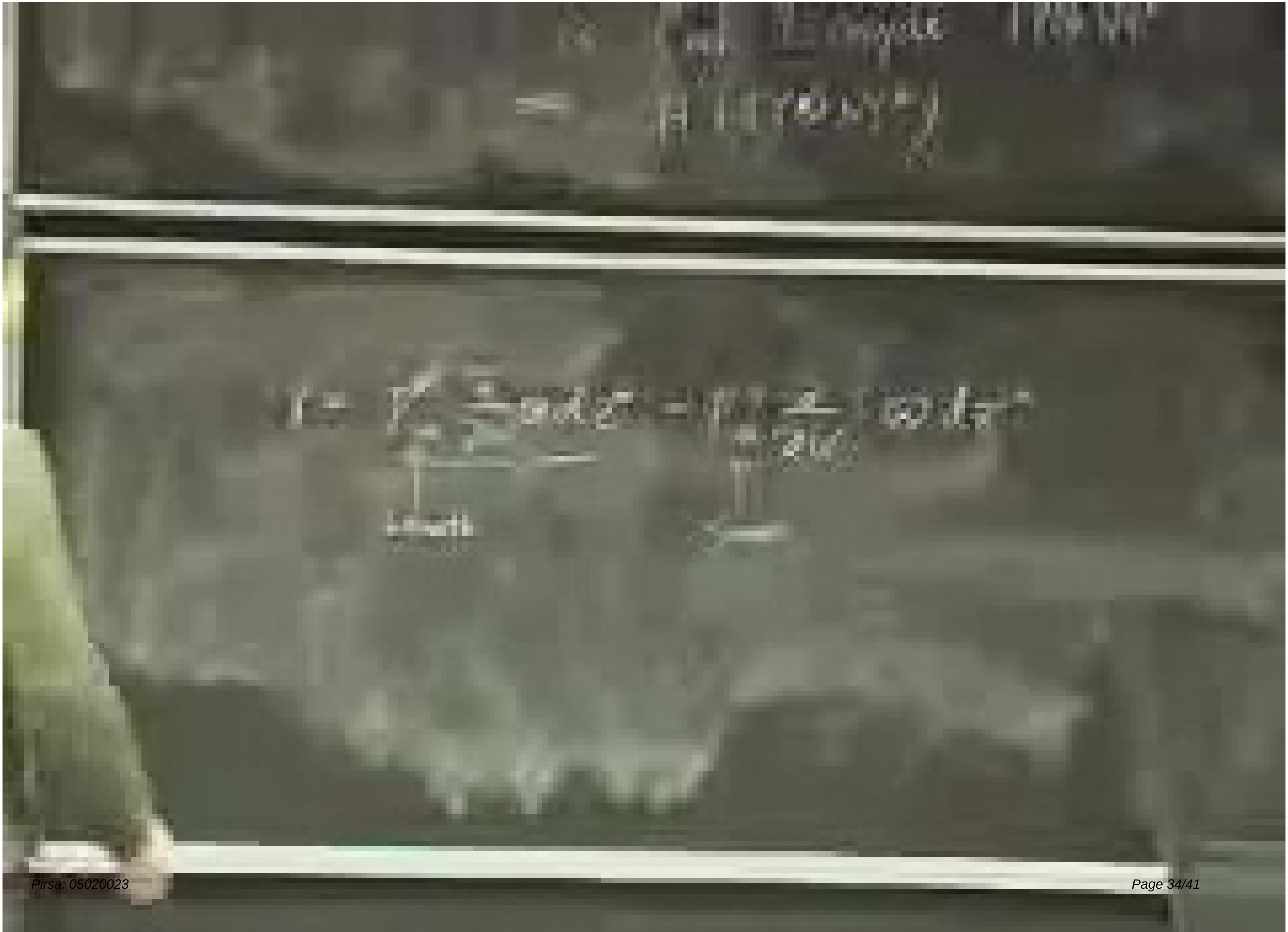


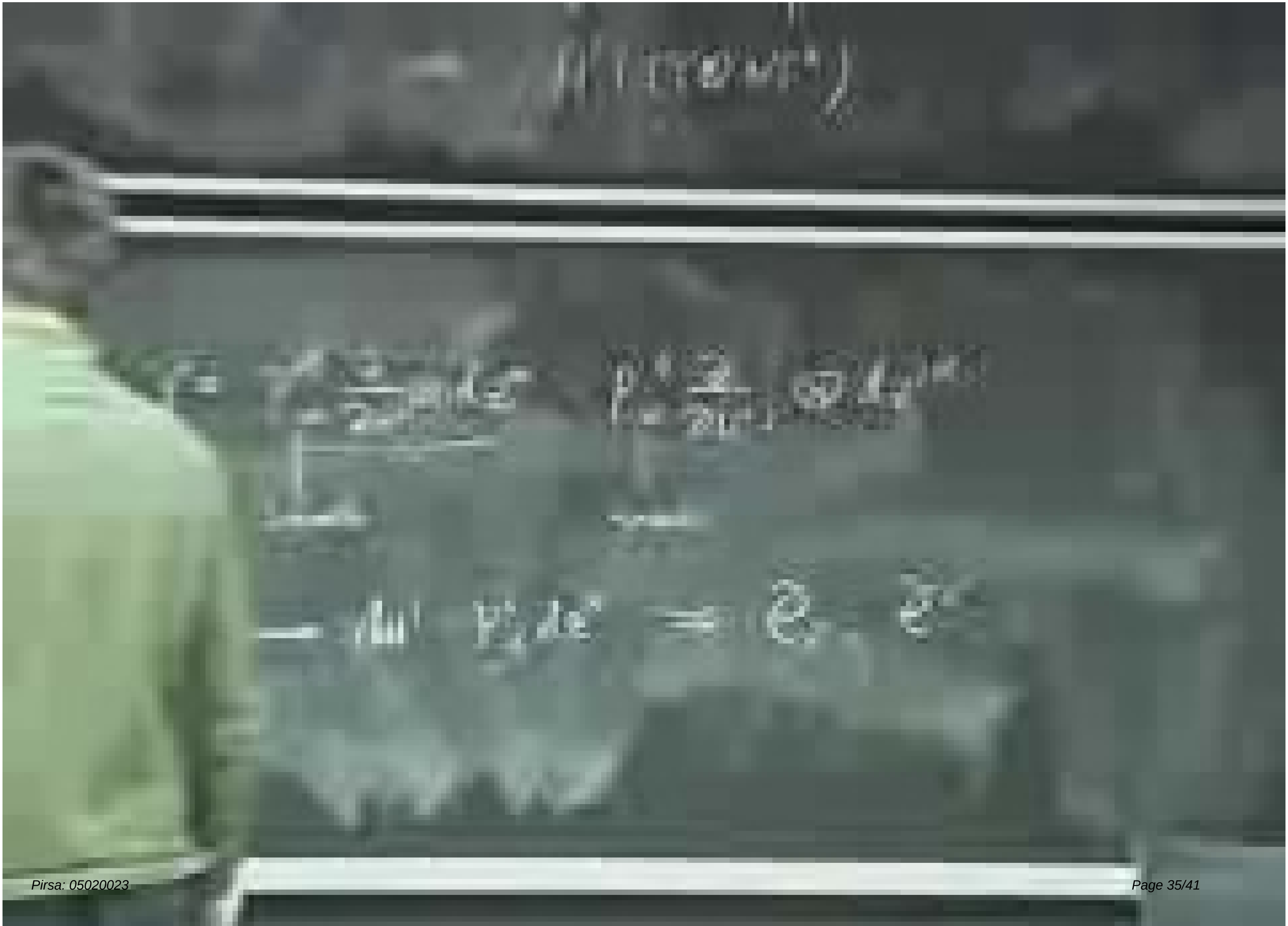


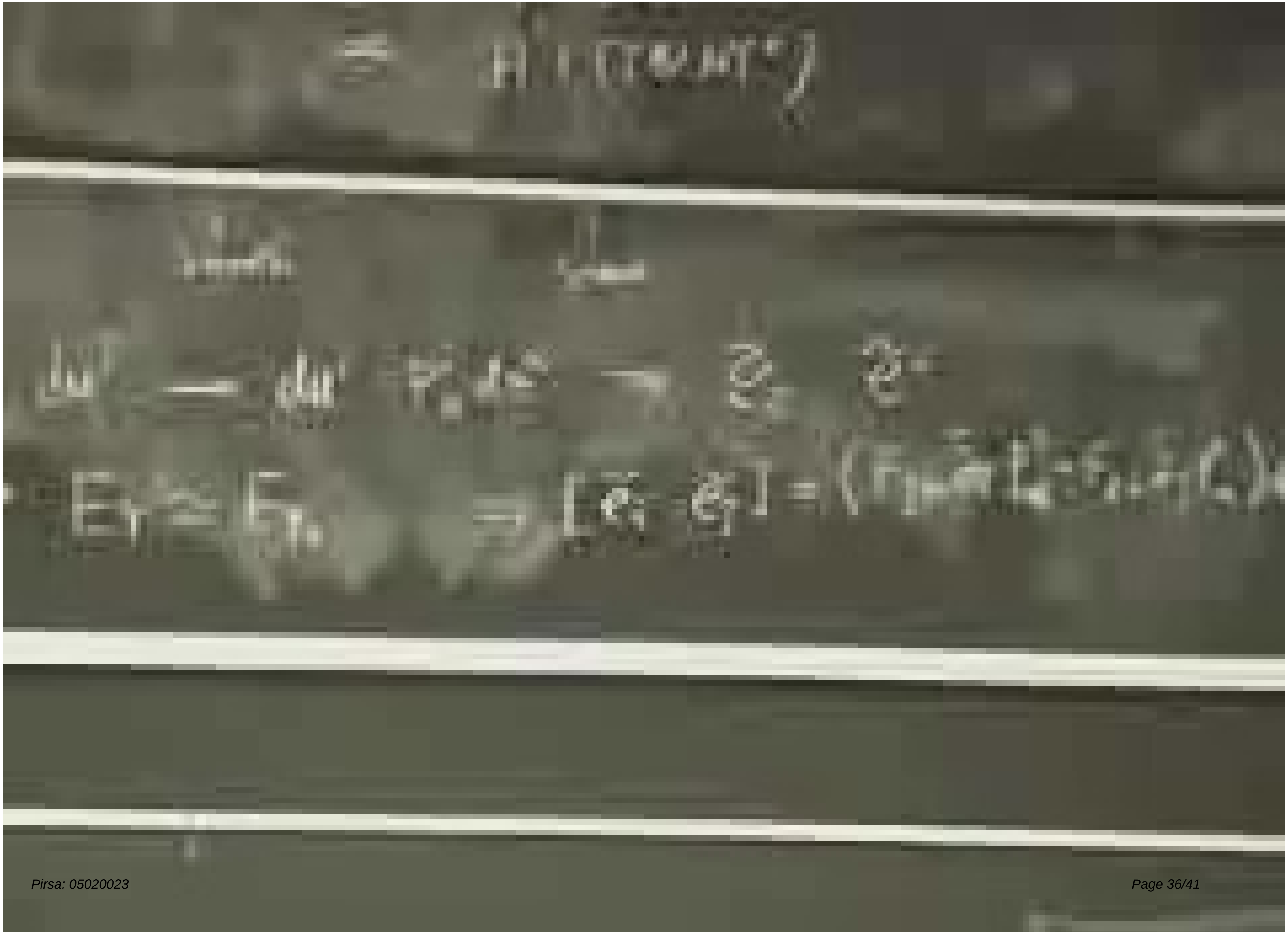


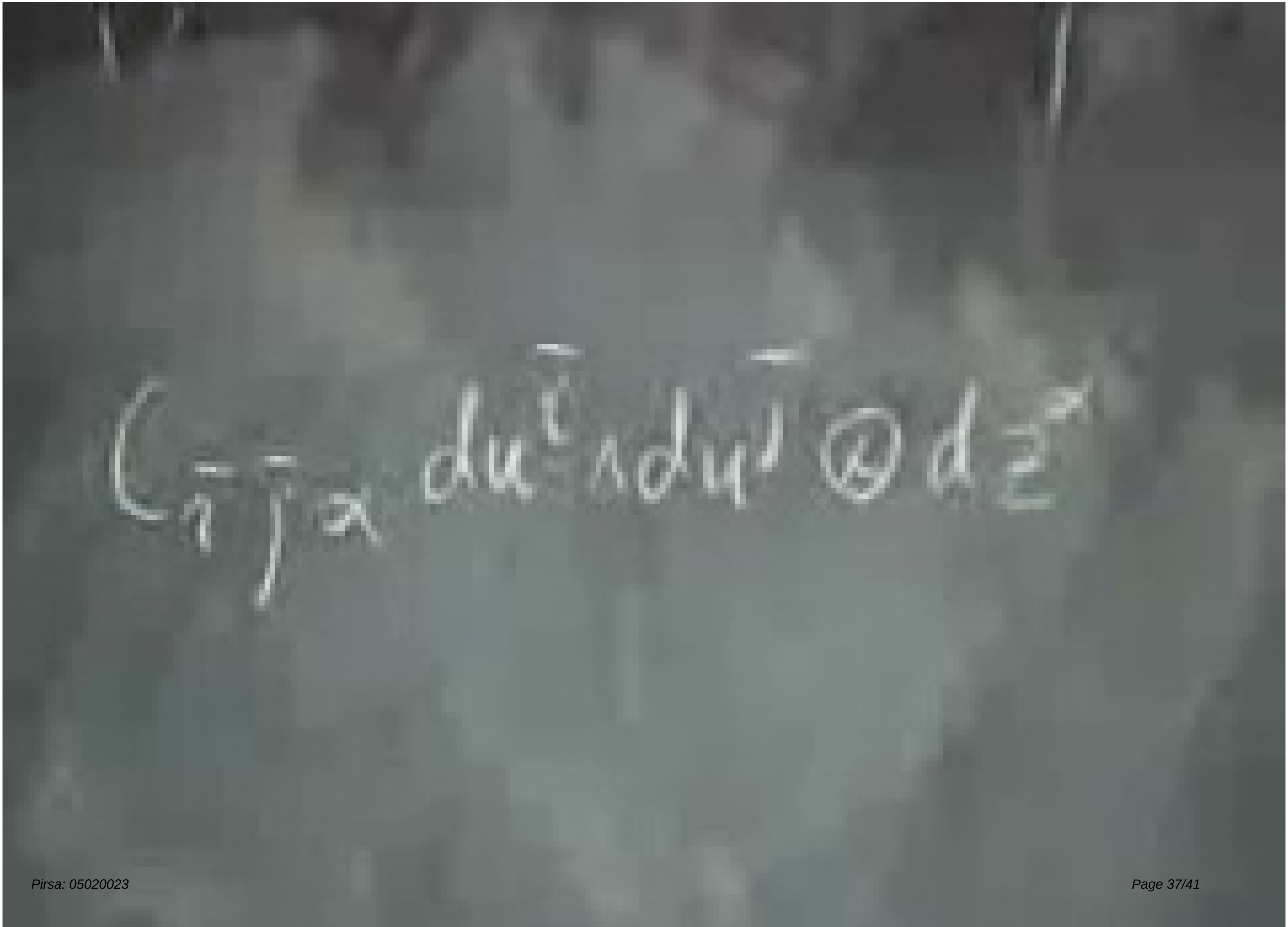


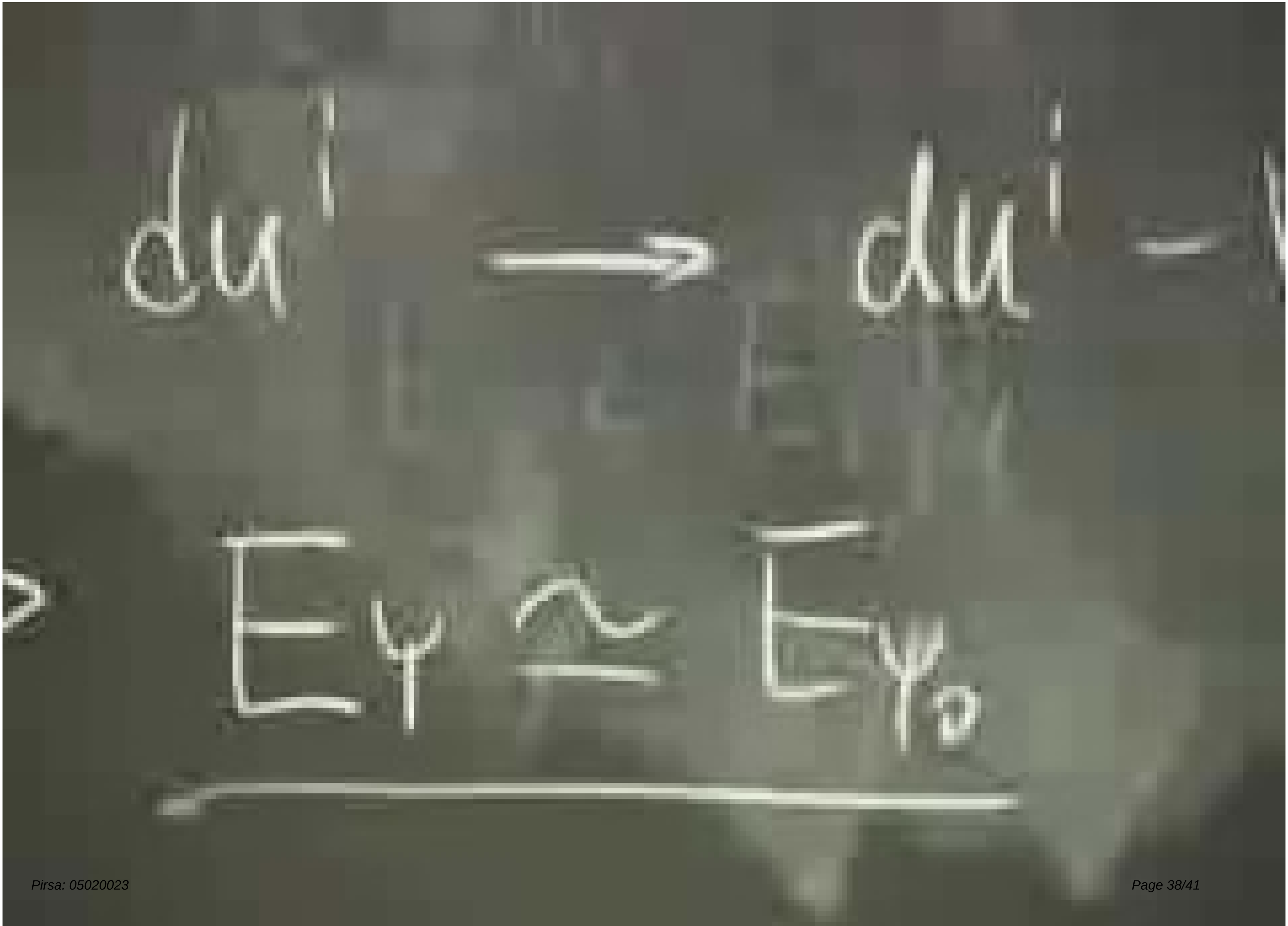

du'^i = (∂u'^i/∂u^j) du^j +
γ = C^i_j ∂/∂u'^i ⊗ dz̄^j
is Cech 1-cocycle

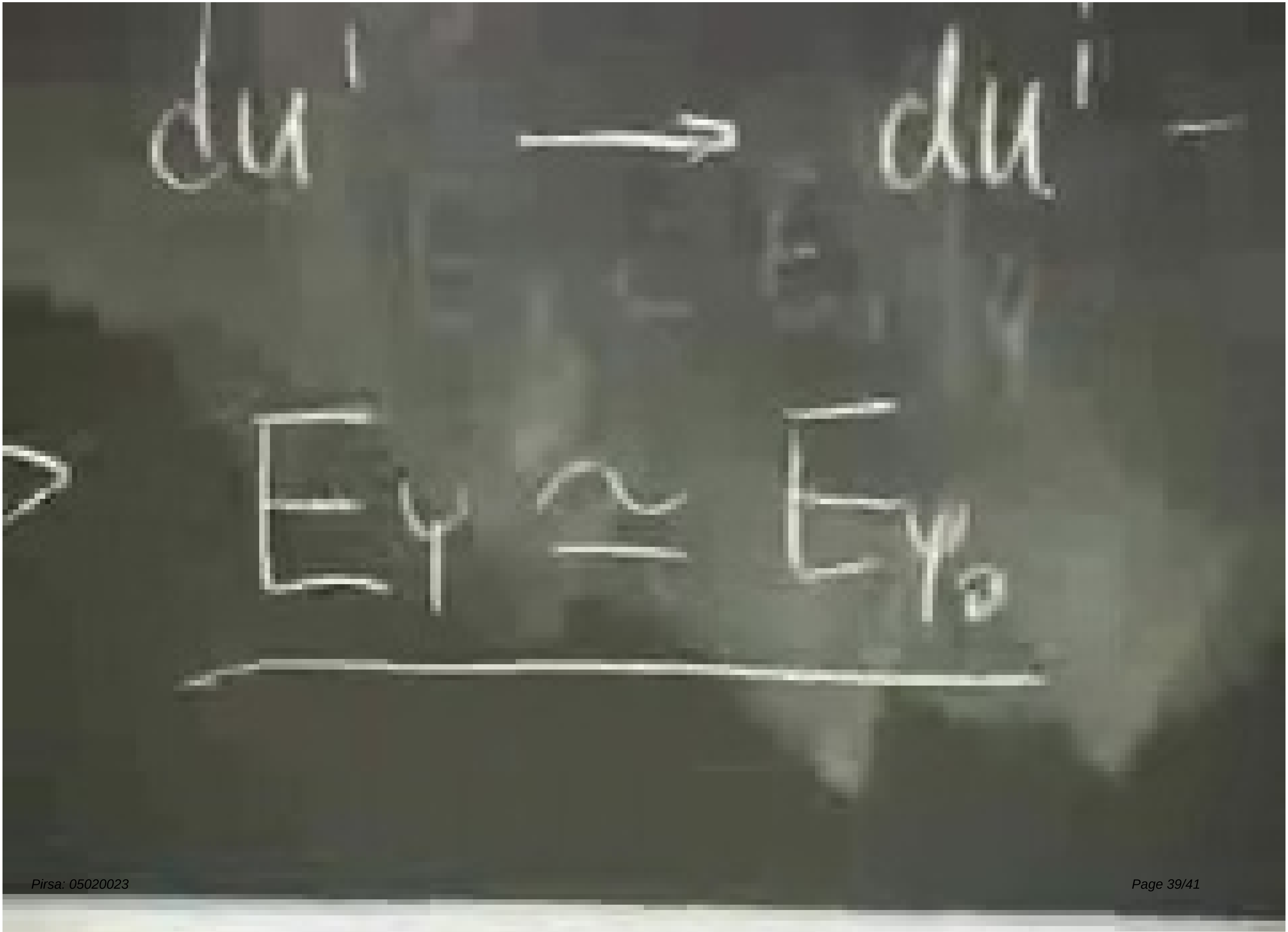







$C_{\bar{i}\bar{j}\alpha}\, du^{\bar{i}} \wedge du^{\bar{j}} \otimes dz^{\alpha}$


du^i → du^i −
E_ψ ≃ E_ψ0


du^i → du^i
E_Ψ ≃ E_Ψ0