Title: String Theory Lecture

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Collection: String Theory 2023/24

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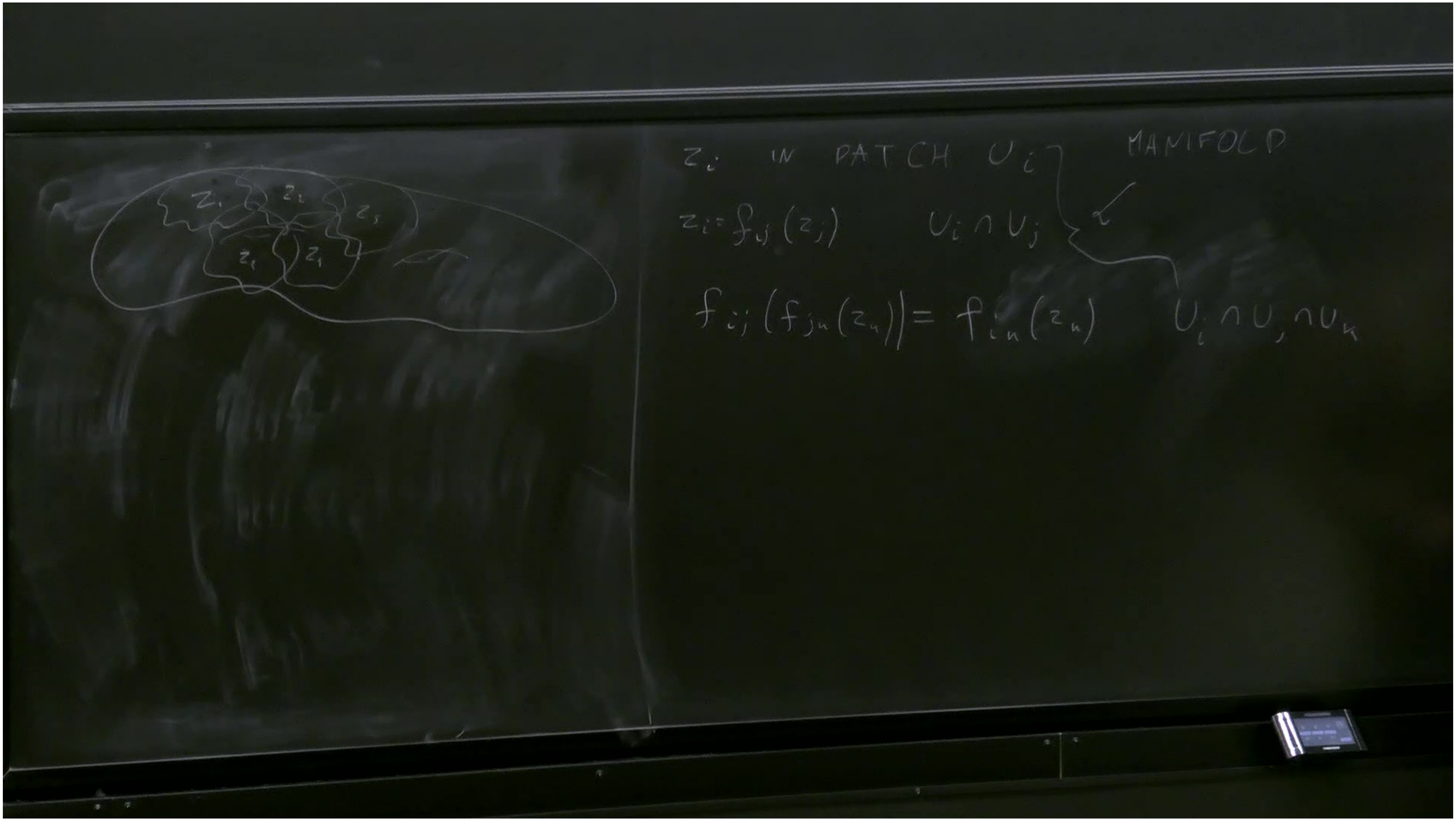
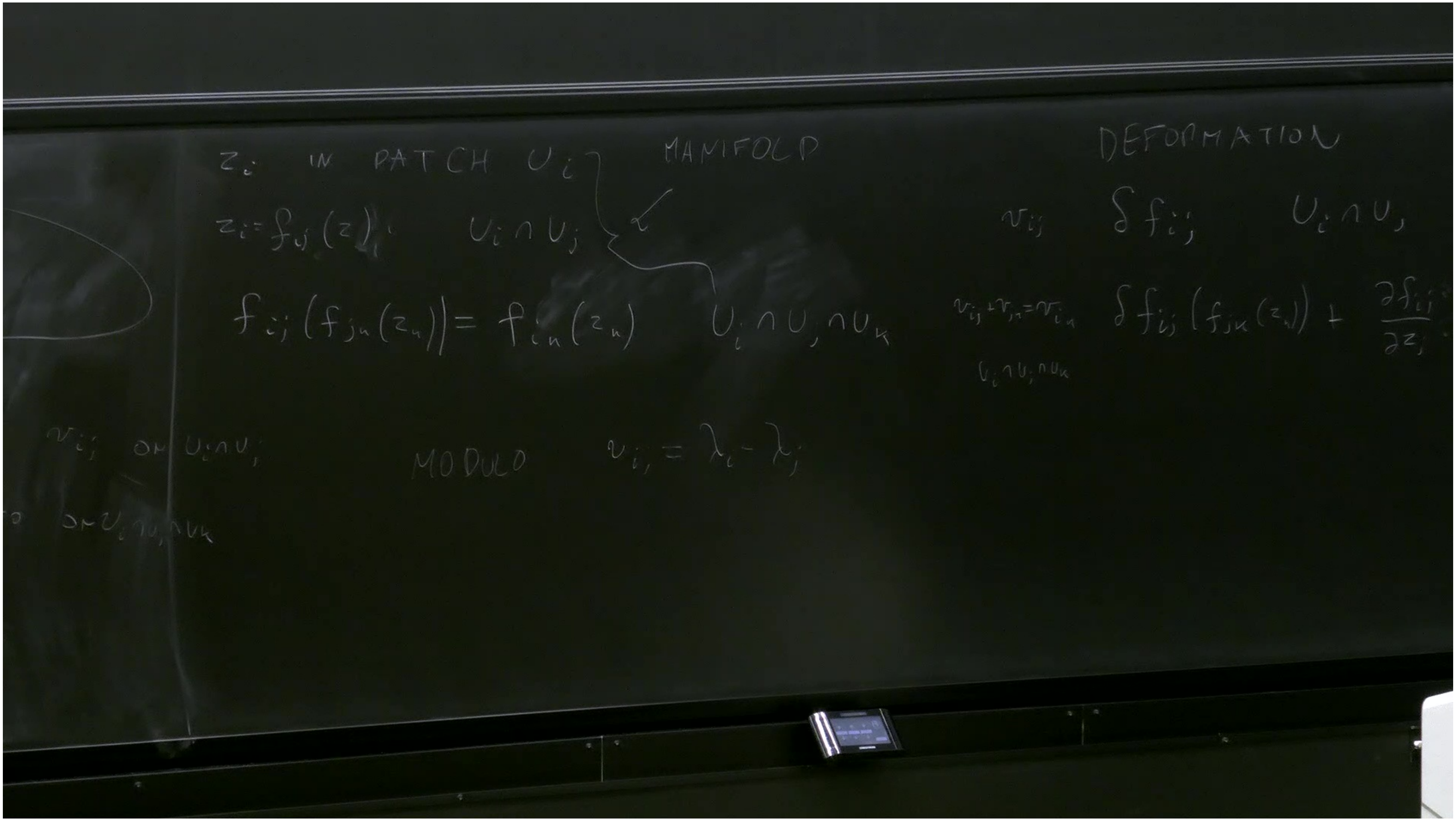
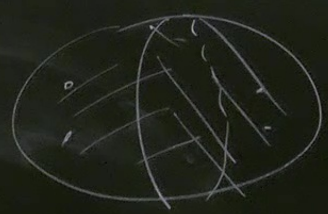
URL: https://pirsa.org/24040043


z_i IN PATCH U_i
MANIFOLD
$z_i = f_{ij}(z_j)$ $U_i \cap U_j$
$f_{ij}(f_{jk}(z_k)) = f_{ik}(z_k)$ $U_i \cap U_j \cap U_k$


z_i IN PATCH U_i
MANIFOLD
$z_i = f_{ij}(z_j)$ $U_i \cap U_j$
$f_{ij}(f_{jk}(z_k)) = f_{ik}(z_k)$ $U_i \cap U_j \cap U_k$
v_{ij} ON $U_i \cap U_j$
ON $U_i \cap U_j \cap U_k$
MODULO $v_{ij} = \lambda_i - \lambda_j$
DEFORMATION
v_{ij} δf_{ij} $U_i \cap U_j$
$v_{ij} + v_{jk} = v_{ik}$ $\delta f_{ij}(f_{jk}(z_k)) + \frac{\partial f_{ij}}{\partial z_j}$
$U_i \cap U_j \cap U_k$



v

$C^n \qquad \lambda_{i_1 \cdots i_n} \qquad U_{i_1} \cap \cdots U_{i_n}$

$\delta : C^n \to C^{n+1} \qquad \lambda_{i_1 \cdots i_n} \pm \lambda_{i_1 i_3 \cdots i_{n+1}} \qquad U \cdots U_{n+1}$

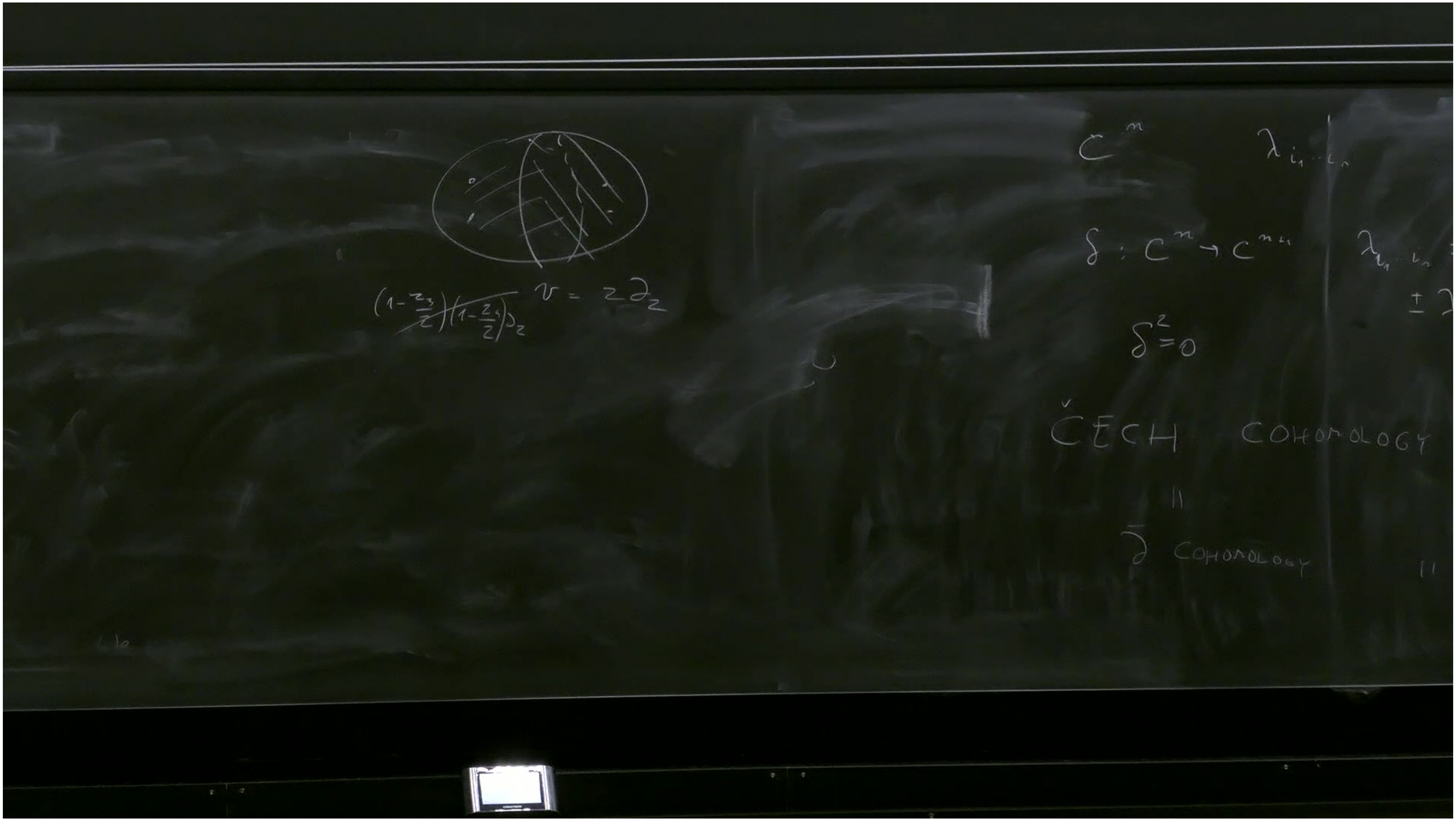
$\pm \lambda_{i_1 i_2 i_4 \cdots i_{n+1}} \cdots$

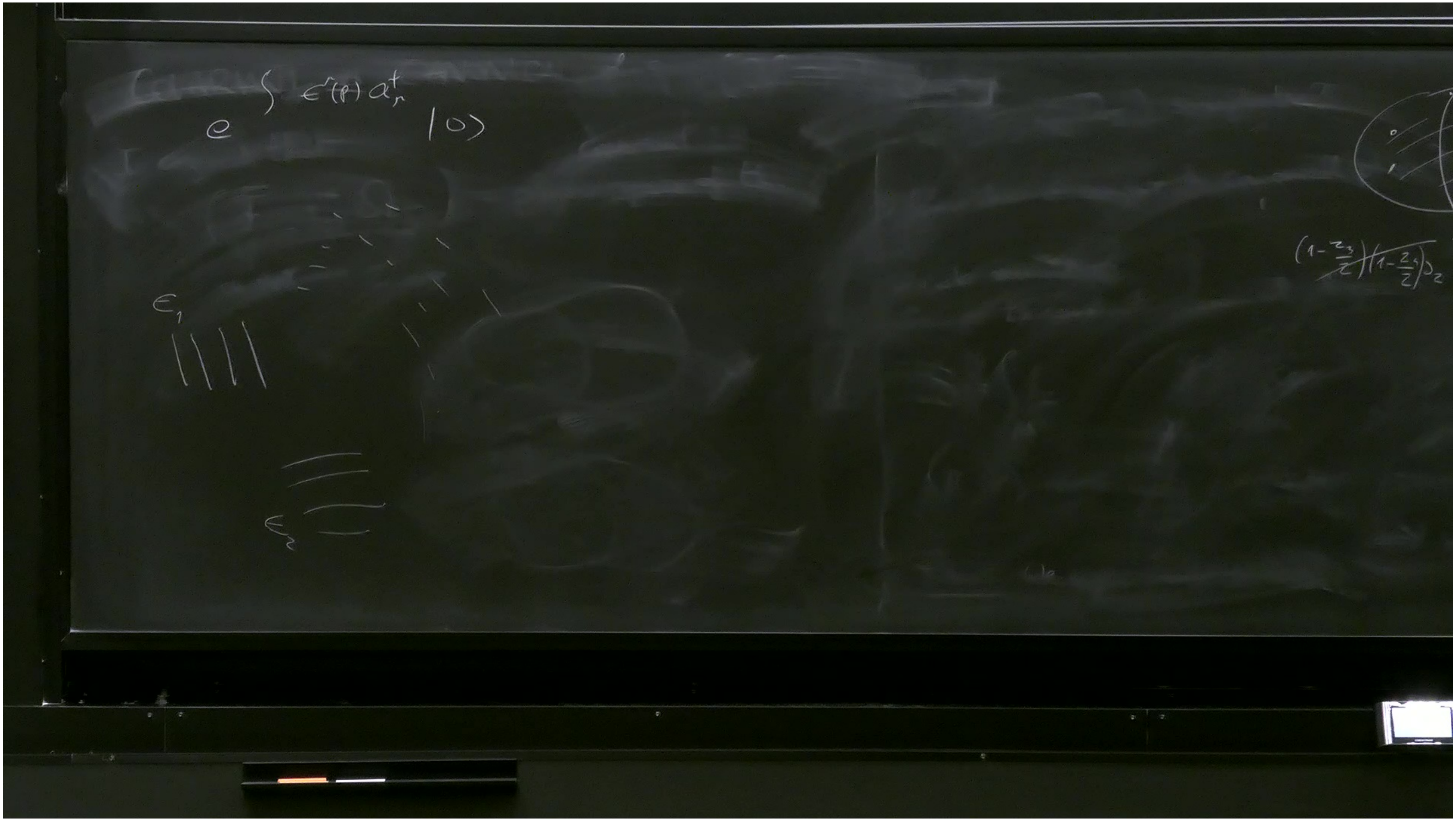
$\delta^2 = 0$

ČECH COHOMOLOGY VALUED IN VECTOR FIELDS

$||$

$\bar{\partial}$ COHOMOLOGY $\qquad ||$


C^n
$\lambda_{i_1 \dots i_n}$
$\delta : C^n \to C^{n+1}$
$\delta^2 = 0$
ČECH COHOMOLOGY
$\bar\partial$ COHOMOLOGY
$v = z\partial_z$


$e^{\int \epsilon^r(p)\, a^\dagger_r}\, |0\rangle$
ϵ_1
ϵ_2
$\left(1-\frac{z_3}{z}\right)\left(1-\frac{z_3}{z}\right)\partial_z$

$$\int \partial X^{\mu} \bar{\partial} X^{\nu} G_{\mu\nu}(X) + \partial X^{\mu} \bar{\partial} X^{\nu} B_{\mu\nu}(X) + T(X)$$

e^{ipX}

$$\frac{1}{\alpha'}\int \partial X^\mu \bar{\partial} X^\nu G_{\mu\nu}(X) + \partial X^\mu \bar{\partial} X^\nu B_{\mu\nu}(X) + T(X) +$$

$$\beta^G_{\mu\nu} = \lambda \partial_\lambda G_{\lambda\mu\nu}(X)$$

1-loop

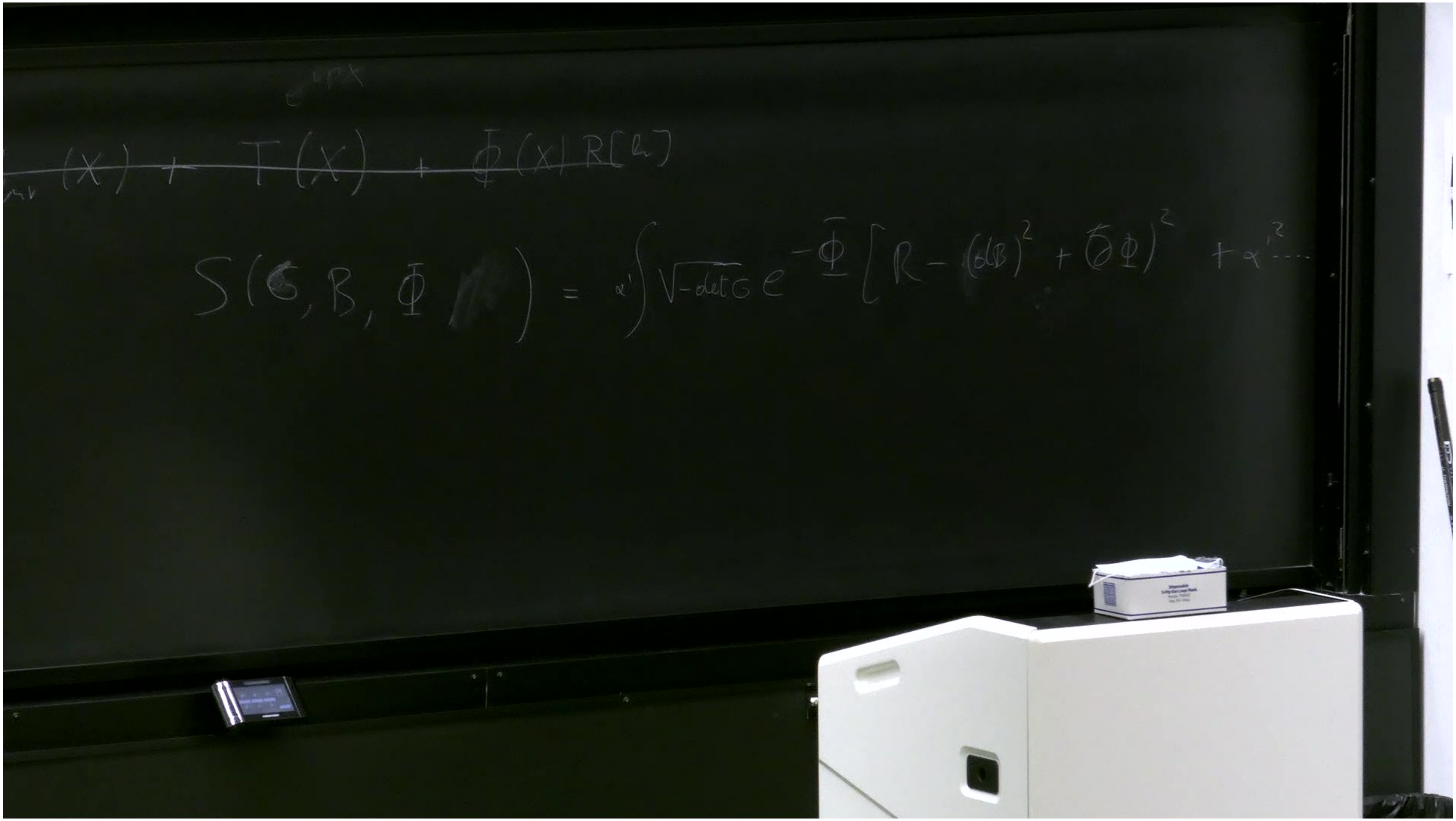
$$0 = \alpha' R_{\mu\nu}[G] + \alpha'^2 \dots$$

$$\beta^G = \dots$$

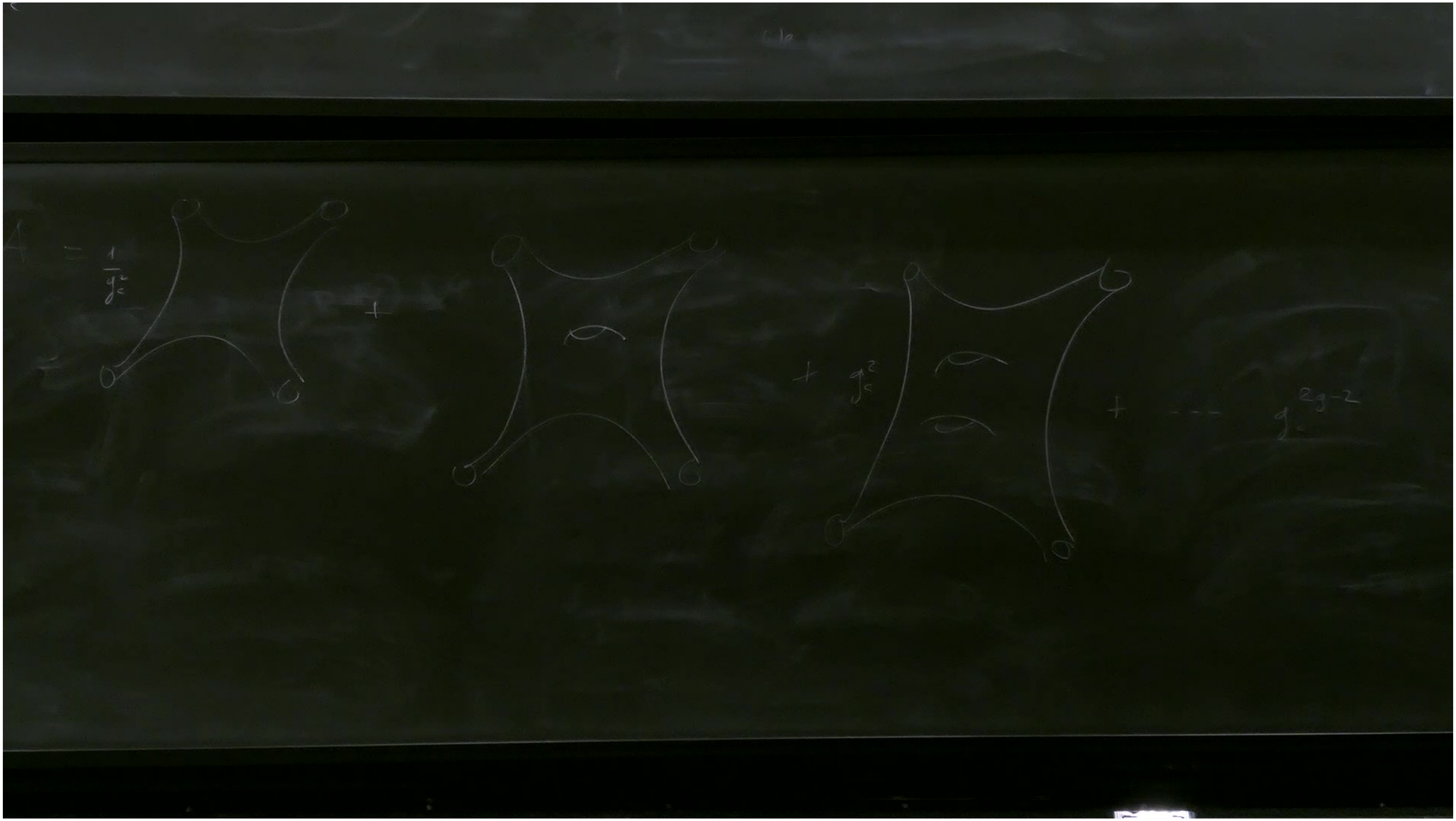
$$\beta^B = \dots$$

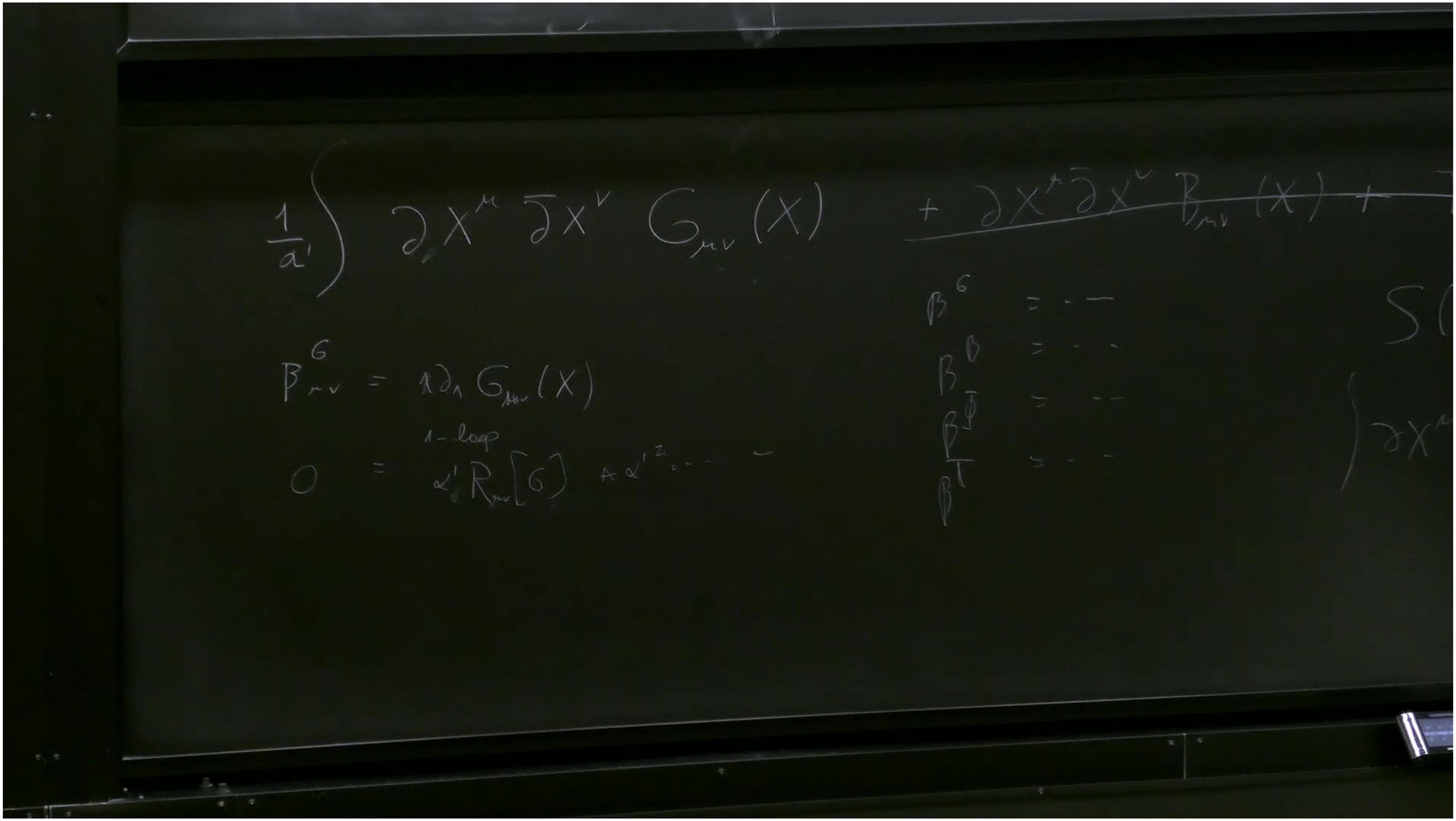
$$\beta^\Phi = \dots$$

$$\beta^T = \dots$$



$S(G, B, \Phi) = \alpha' \int \sqrt{-\det G}\, e^{-\Phi} [R - (dB)^2 + (\partial\Phi)^2 + \alpha'^2 \dots$




$\frac{1}{\alpha'}\int \partial X^\mu \bar{\partial} X^\nu G_{\mu\nu}(X)$ $\cancel{+ \partial X^\mu \bar{\partial} X^\nu B_{\mu\nu}(X) +}$
$\beta^G_{\mu\nu} = \lambda \partial_\lambda G_{\mu\nu}(X)$
1-loop
$0 = \alpha' R_{\mu\nu}[G] + \alpha'^2 \ldots$
$\beta^G = \ldots$
$\beta^B = \ldots$
$\beta^\Phi = \ldots$
$\beta^T = \ldots$
$S($
$\int \partial X^\mu$