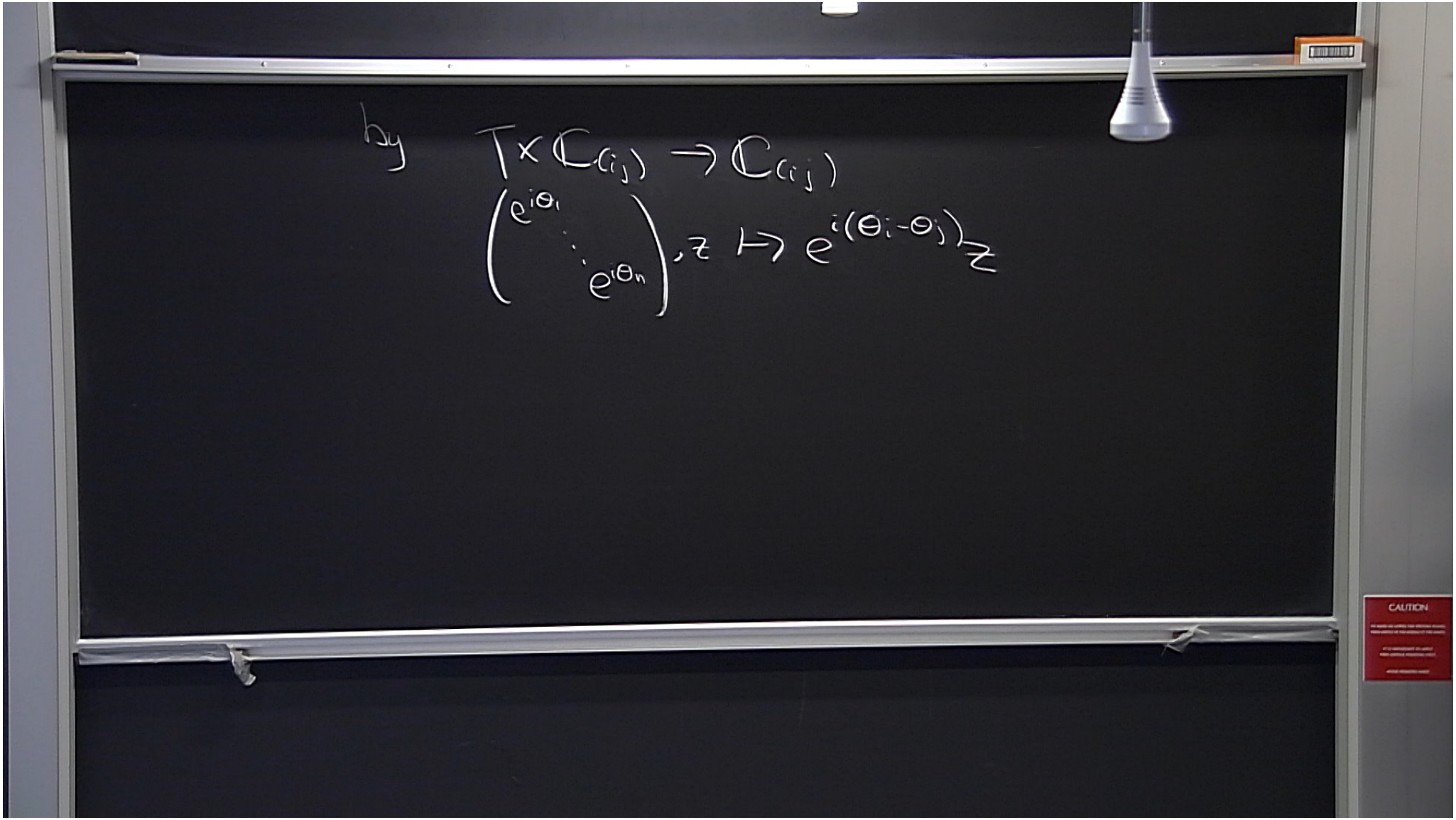
Title: TBA - Adina Gamse

Date: May 07, 2018 11:00 AM

URL: http://pirsa.org/18050060

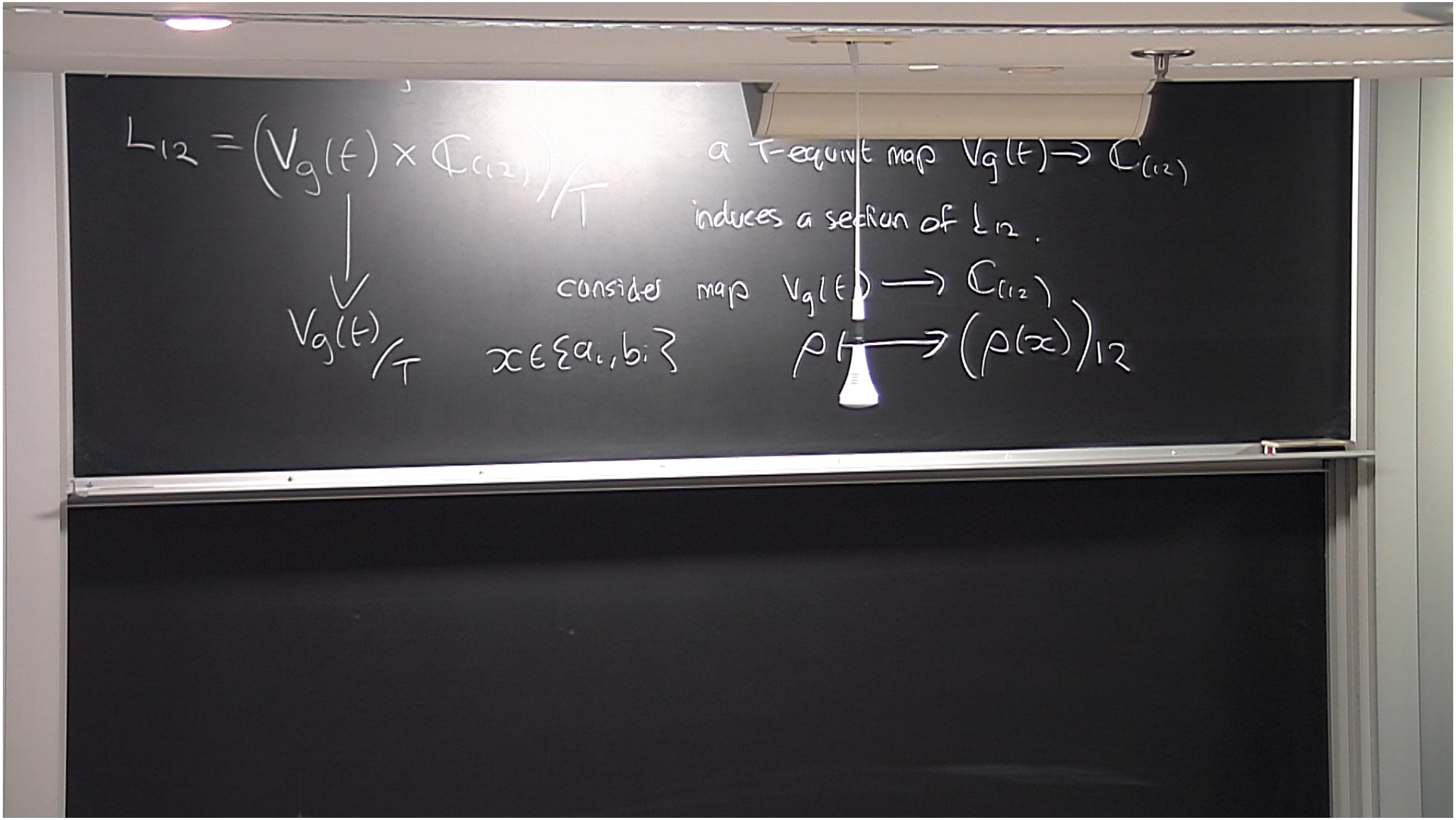
Abstract: TBA


by
$T \times \mathbb{C}_{(i,j)} \to \mathbb{C}_{(i,j)}$
$\begin{pmatrix} e^{i\theta_1} & & \\ & \ddots & \\ & & e^{i\theta_n} \end{pmatrix}, z \mapsto e^{i(\theta_i - \theta_j)} z$
CAUTION

by $T \times \mathbb{C}_{(i,j)} \to \mathbb{C}_{(i,j)}$

$$\left(\begin{pmatrix} e^{i\theta_1} & & \\ & \ddots & \\ & & e^{i\theta_n} \end{pmatrix}, z \right) \mapsto e^{i(\theta_i - \theta_j)} z$$

Thm (–, Weilsman) The product $\prod c_1(L_{ij})^{k_{ij}}$ vanishes in $H^*(Sg(t); \mathbb{Q})$ whenever $\sum k_{ij} \geq n(n-1)g - n + 2$.


$L_{12} = (V_g(t) \times \mathbb{C}_{(12)})/T$
$V_g(t)/T$
a T-equivt map $V_g(t) \to \mathbb{C}_{(12)}$
induces a section of L_{12}.
consider map $V_g(t) \to \mathbb{C}_{(12)}$
$x \in \{a_i, b_i\}$
$\rho \mapsto (\rho(x))_{12}$

sections $\rho(x)$ for $x \in \{a_i, b_i\}$ all vanish

when $\rho(x) = \begin{pmatrix} * & 0 \\ 0 & * \end{pmatrix}$ $\Rightarrow$ $2g$ sections, no common zeros

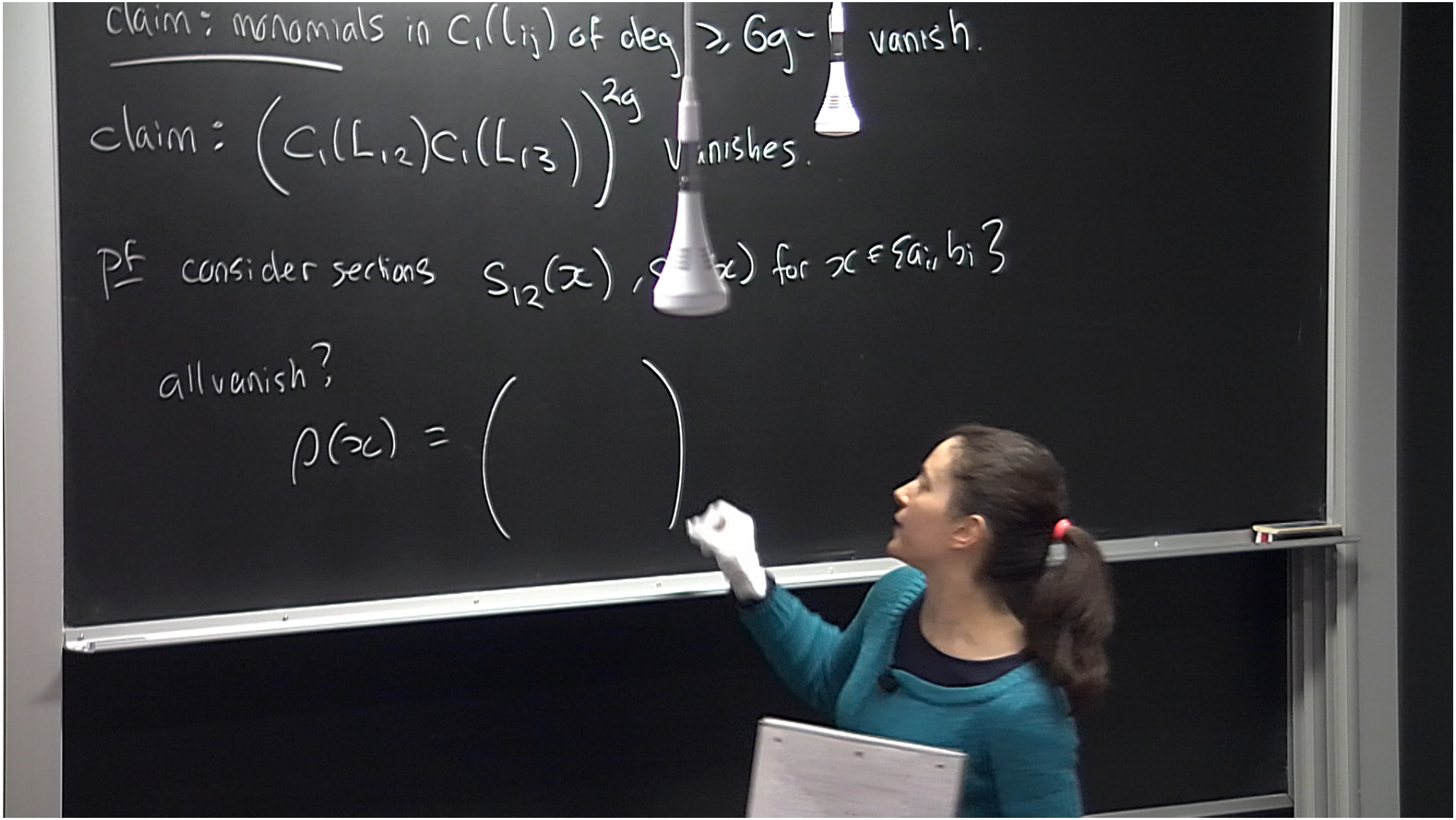
$c_1(L_{12})^{2g} = 0$.

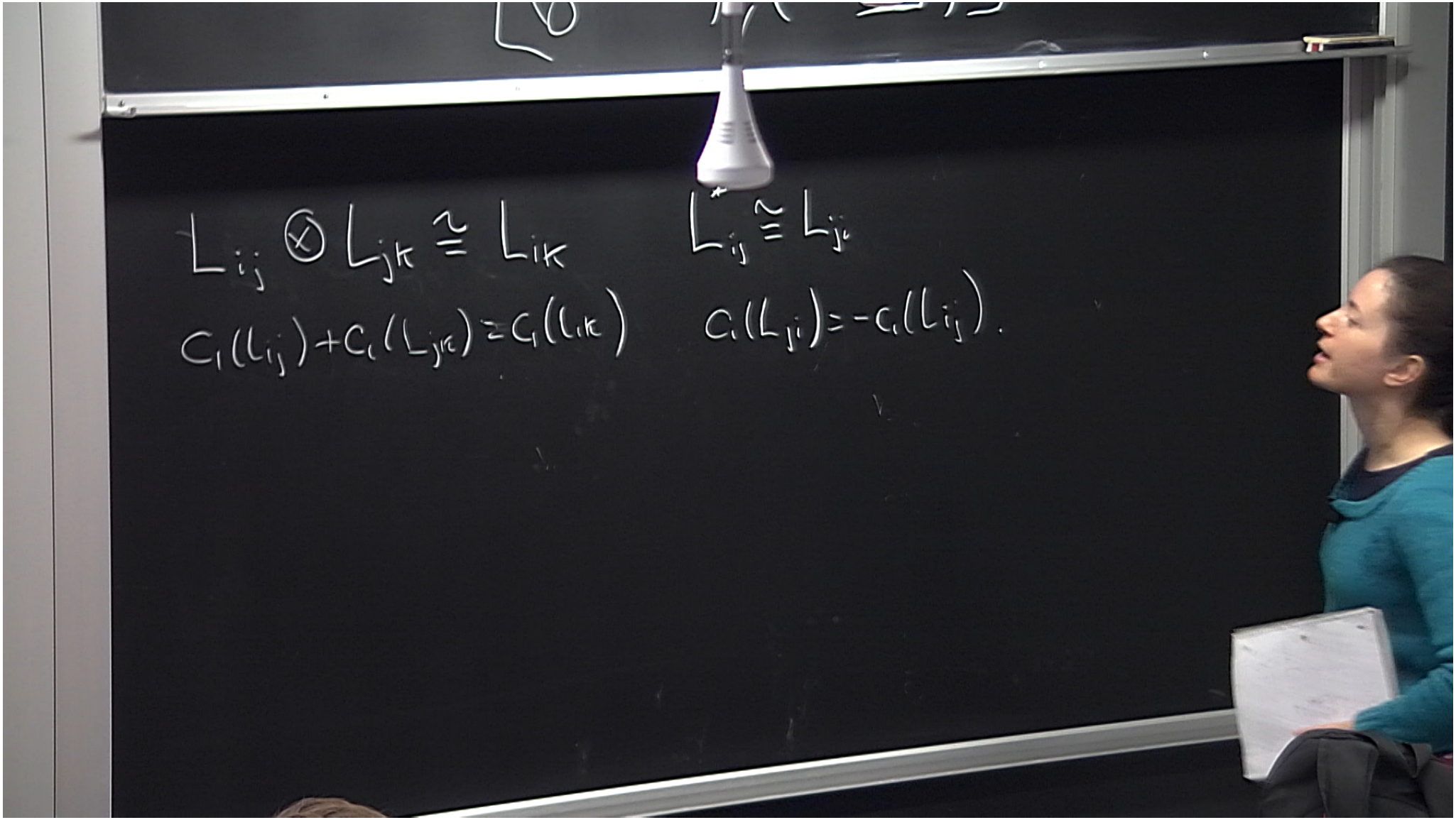
$\Pi\,[\rho(a_i), \rho(b_i)] = 1$

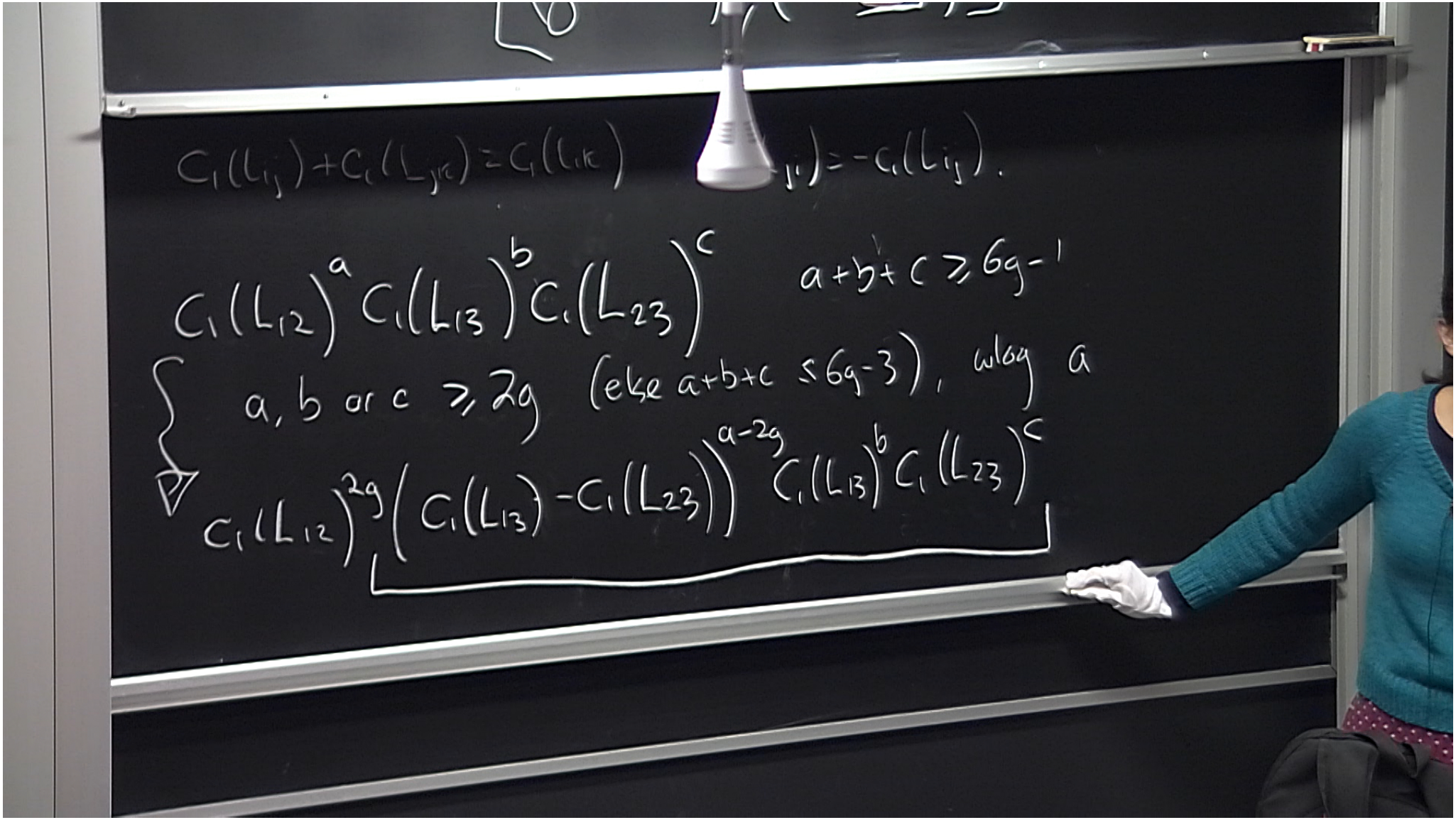
$\rho(c) = t$

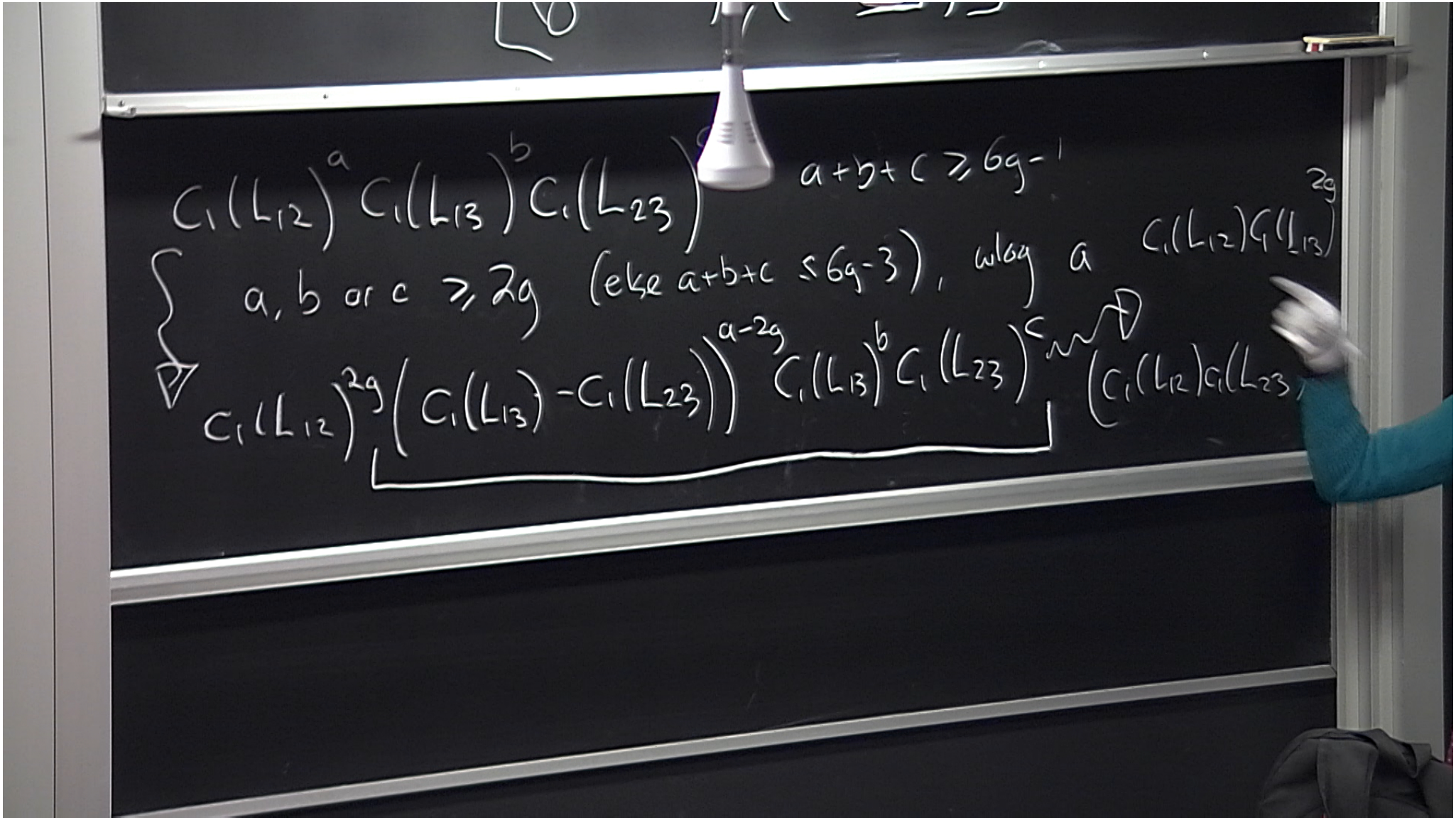
not generic!

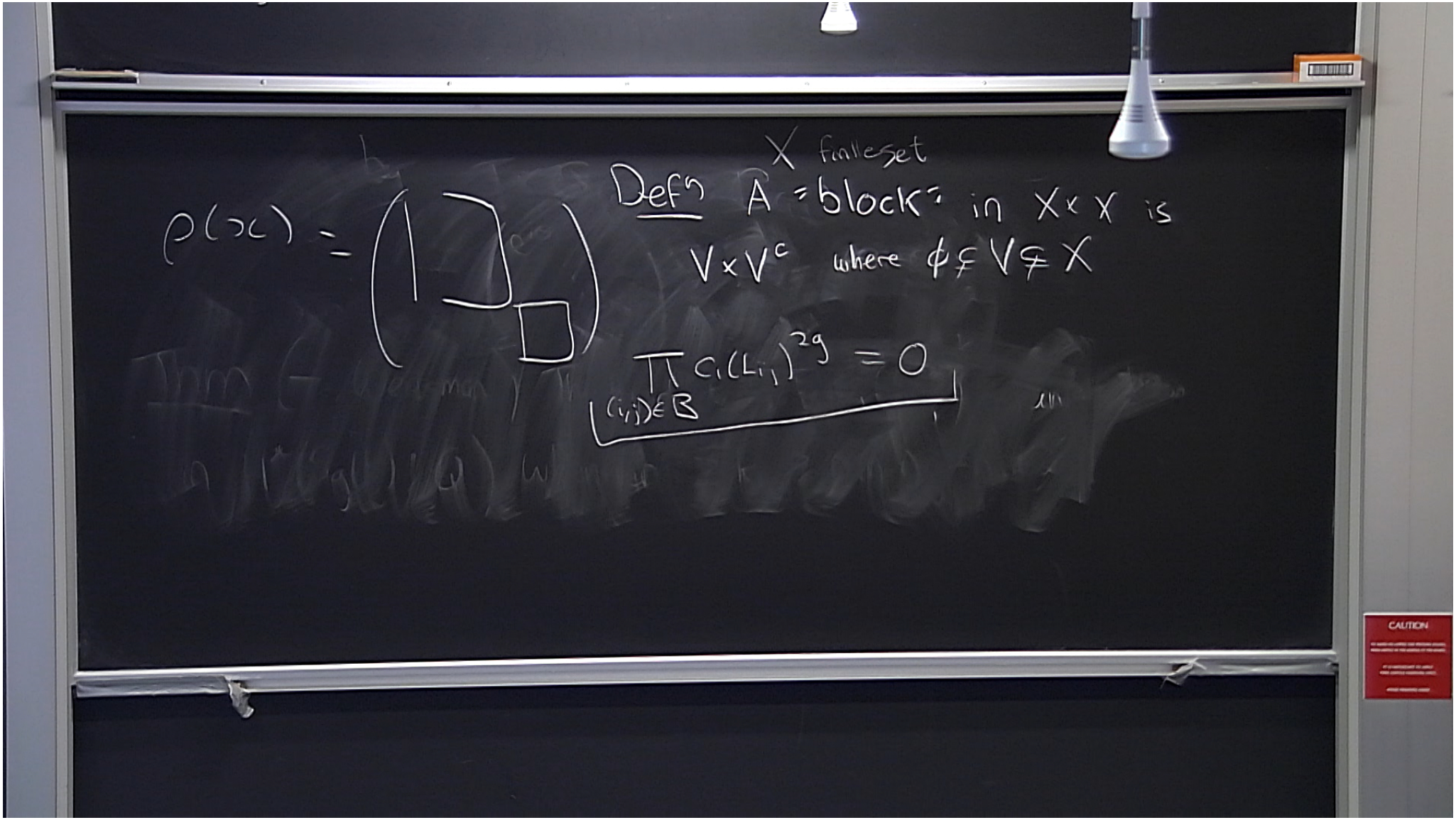
CAUTION

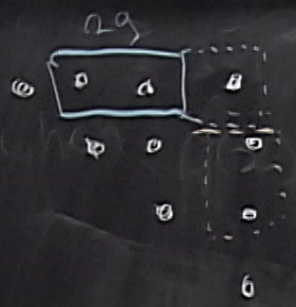

claim: monomials in $c_i(L_{ij})$ of deg $\geq 6g-$ vanish.
claim: $\left(c_1(L_{12})c_1(L_{13})\right)^{2g}$ vanishes.
Pf consider sections $s_{12}(x)$, $s_{13}(x)$ for $x \in \{a_i, b_i\}$
all vanish?
$\rho(x) =$


$L_{ij} \otimes L_{jk} \cong L_{ik}$
$L_{ij}^* \cong L_{ji}$
$c_1(L_{ij}) + c_1(L_{jk}) = c_1(L_{ik})$
$c_1(L_{ji}) = -c_1(L_{ij})$.


$c_1(L_{ij}) + c_1(L_{jk}) = c_1(L_{ik})$
$= -c_1(L_{ij})$.
$c_1(L_{12})^a c_1(L_{13})^b c_1(L_{23})^c$ $a+b+c \geq 6g-1$
a, b or $c \geq 2g$ (else $a+b+c \leq 6g-3$), wlog a
$c_1(L_{12})^{2g}\left(c_1(L_{13}) - c_1(L_{23})\right)^{a-2g} c_1(L_{13})^b c_1(L_{23})^c$


$c_1(L_{12})^a c_1(L_{13})^b c_1(L_{23})^c$ $a+b+c \geq 6g-1$
a, b or $c \geq 2g$ (else $a+b+c \leq 6g-3$), wlog a
$c_1(L_{12})^{2g}\left(c_1(L_{13})-c_1(L_{23})\right)^{a-2g} c_1(L_{13})^b c_1(L_{23})^c$
$c_1(L_{12})^{2g}$
$c_1(L_{12})c_1(L_{13})^{2g}$
$(c_1(L_{12})c_1(L_{23}$

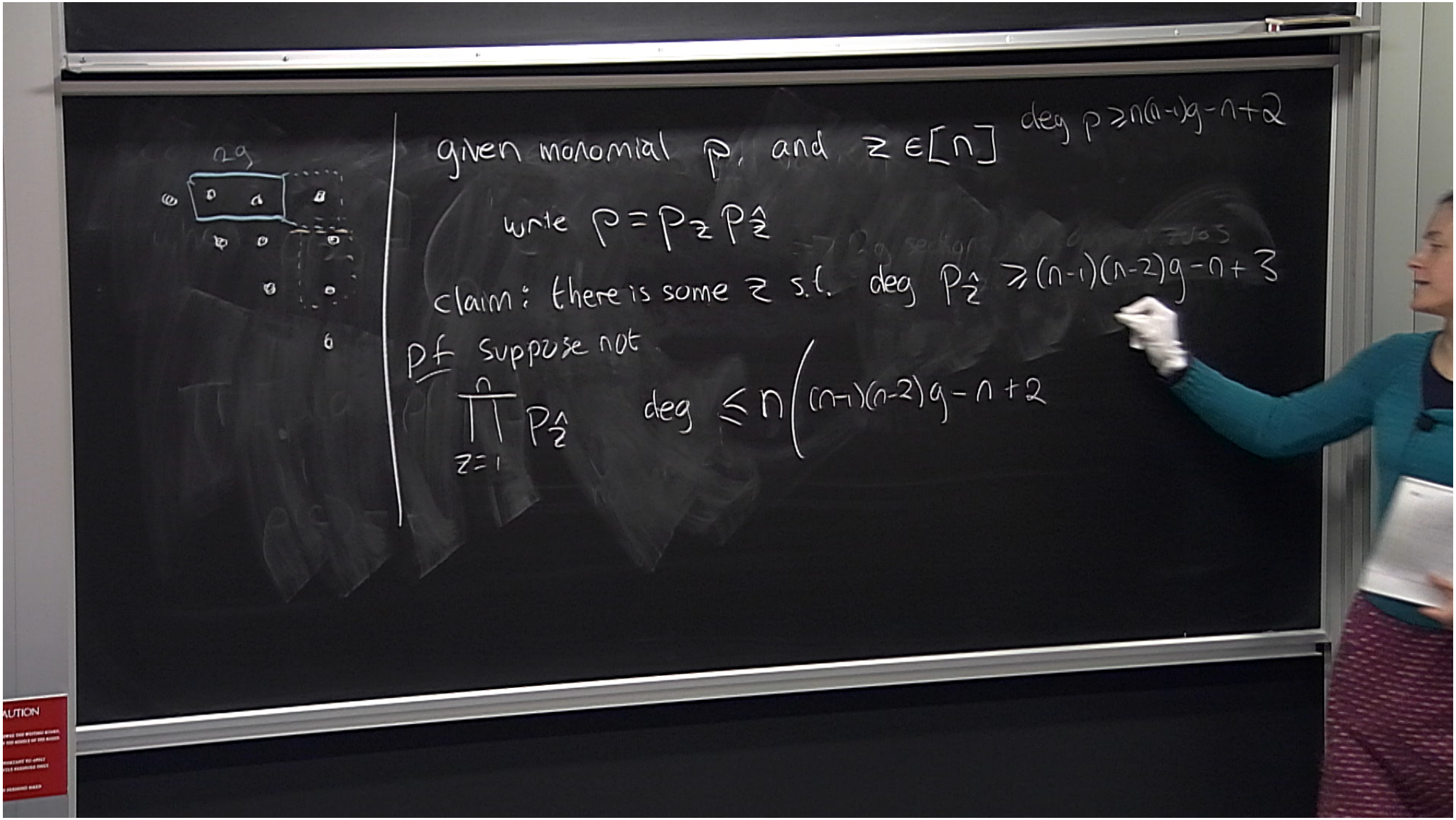

X finite set
Defn A = block in X × X is
V × V^c where ∅ ≠ V ≠ X
ρ(x) =
∏ c_1(L_{i,j})^{2g} = 0
(i,j) ∈ B
CAUTION

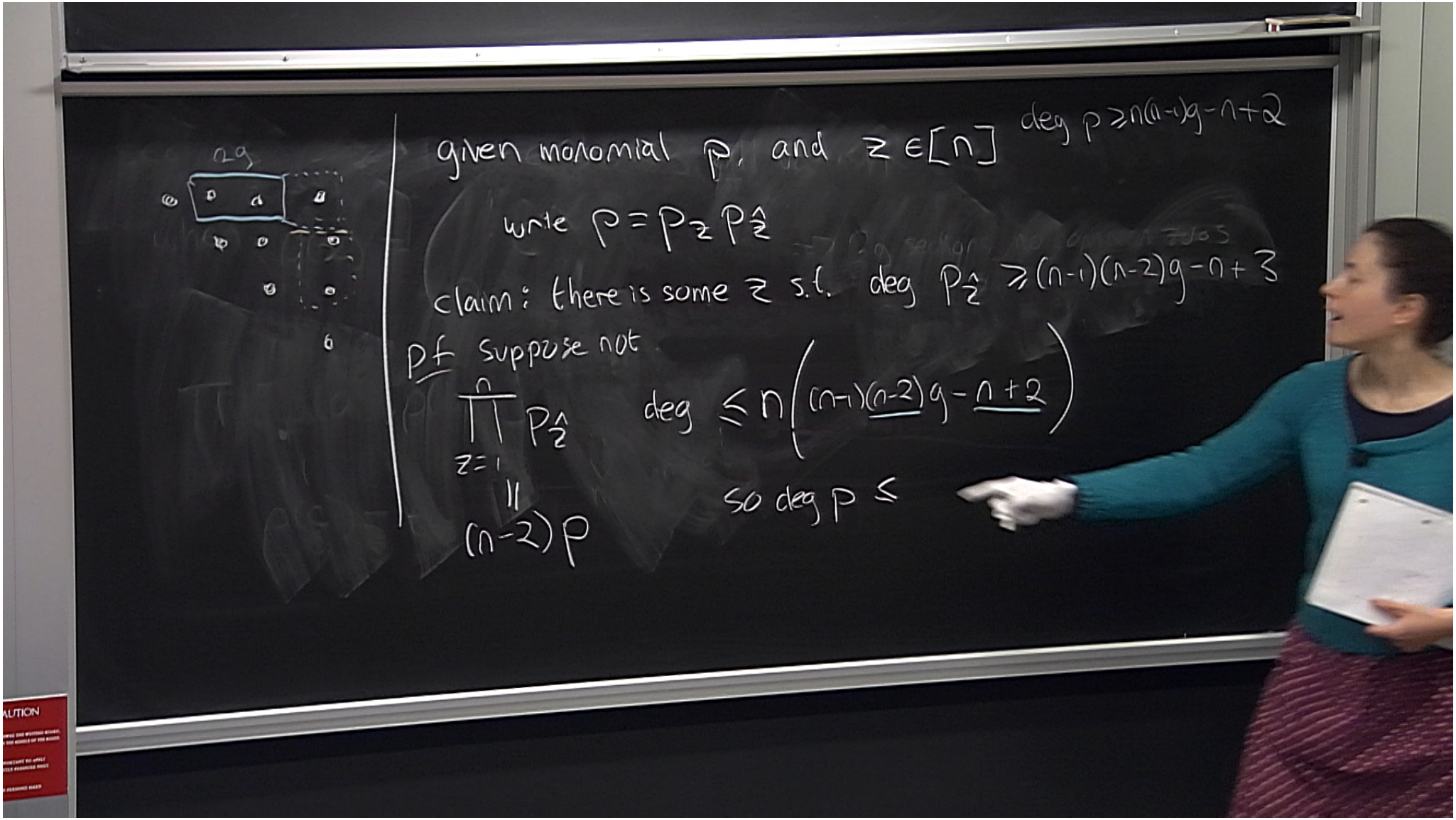


given monomial p, and $z \in [n]$ $\quad \deg p \geq n(n-1)g - n + 2$

write $p = p_z p_{\hat{z}}$

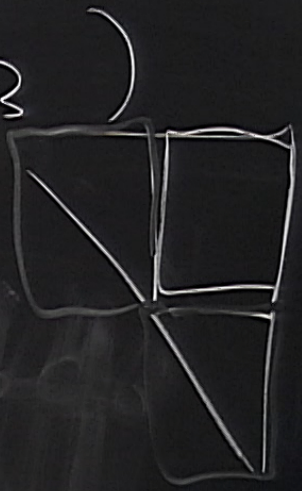
claim: there is some z s.t. $\deg p_{\hat{z}} \geq (n-1)(n-2)g - n + 3$


2g
given monomial p, and $z \in [n]$
deg $p \geq n(n-1)g - n + 2$
write $p = p_z \hat{p_z}$
claim: there is some z s.t. deg $\hat{p_z} \geq (n-1)(n-2)g - n + 3$
Pf suppose not
$\prod_{z=1}^{n} \hat{p_z}$ deg $\leq n\left((n-1)(n-2)g - n + 2\right)$


2g
given monomial p, and $z \in [n]$
$\deg p \geq n(n-1)g - n + 2$
write $p = p_z \hat{p_z}$
claim: there is some z s.t. $\deg \hat{p_z} \geq (n-1)(n-2)g - n + 3$
Pf suppose not
$\prod_{z=1}^{n} \hat{p_z}$
$\deg \leq n\left((n-1)(n-2)g - n + 2\right)$
$= (n-2)p$
so $\deg p \leq$

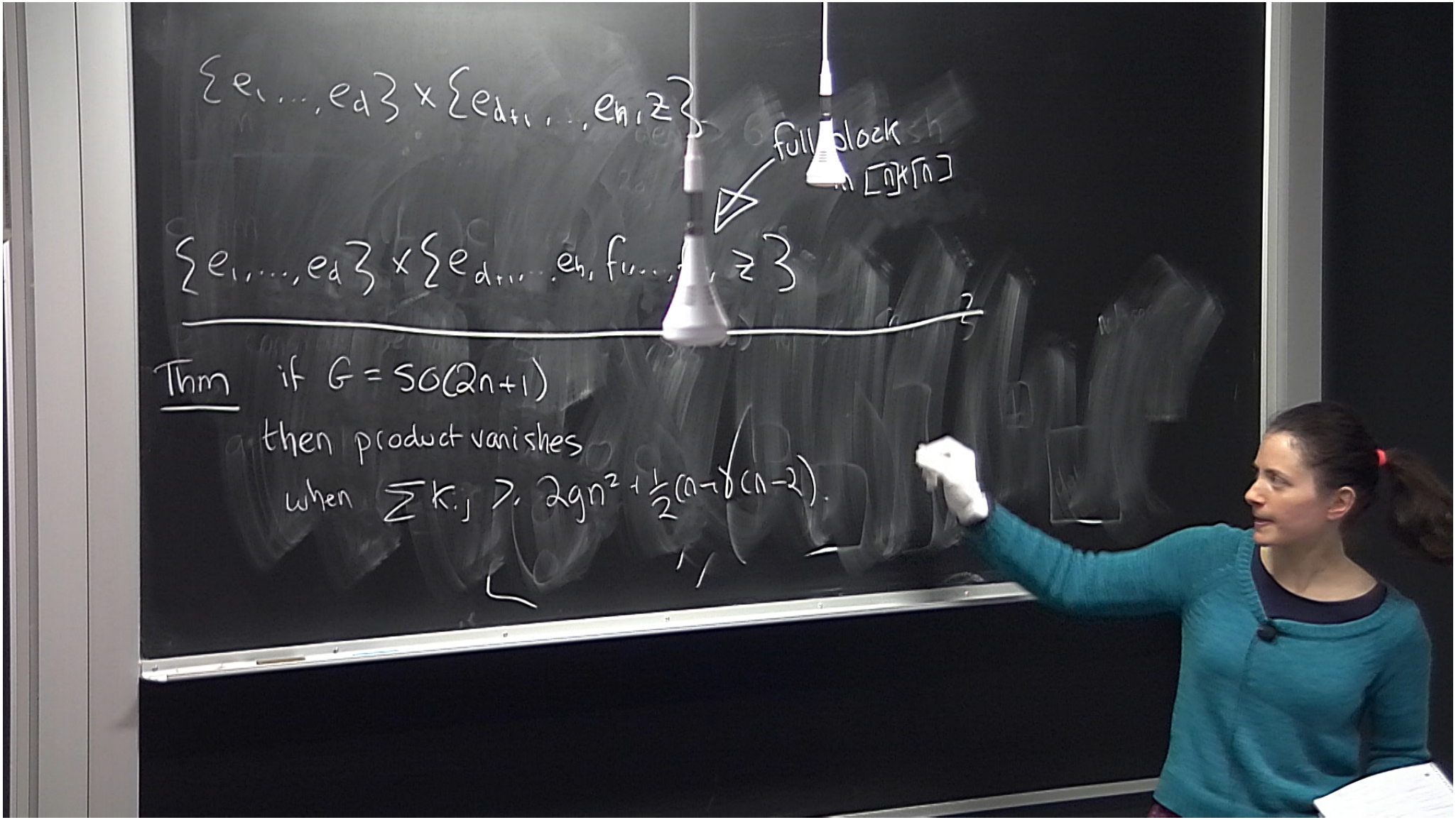
suppose block found by ind. hyp. (so $[n] = \{e_i, f_j, z\}$)

is $\{e_1, \ldots, e_h\} \times \{f_1, \ldots, f_w\}$ $\quad h+w = n-1$



claim can apply ind. hyp. to either $\{e_1, \ldots, e_h, z\}$ or $\{f_1, \ldots, f_w, z\}$

ie $n(n-1)g - n + 2 - 2gwh$ $\quad (h+1)hg - (h+1) + 2$ $\quad (w+1)wg - (w+1) + 2$


$\{e_1, \ldots, e_d\} \times \{e_{d+1}, \ldots, e_n, z\}$
full block
$[n] \times [n]$
$\{e_1, \ldots, e_d\} \times \{e_{d+1} \ldots e_n, f_1 \ldots f_n, z\}$
Thm if $G = SO(2n+1)$
then product vanishes
when $\sum k_j > 2gn^2 + \frac{1}{2}(n-1)(n-2)$.