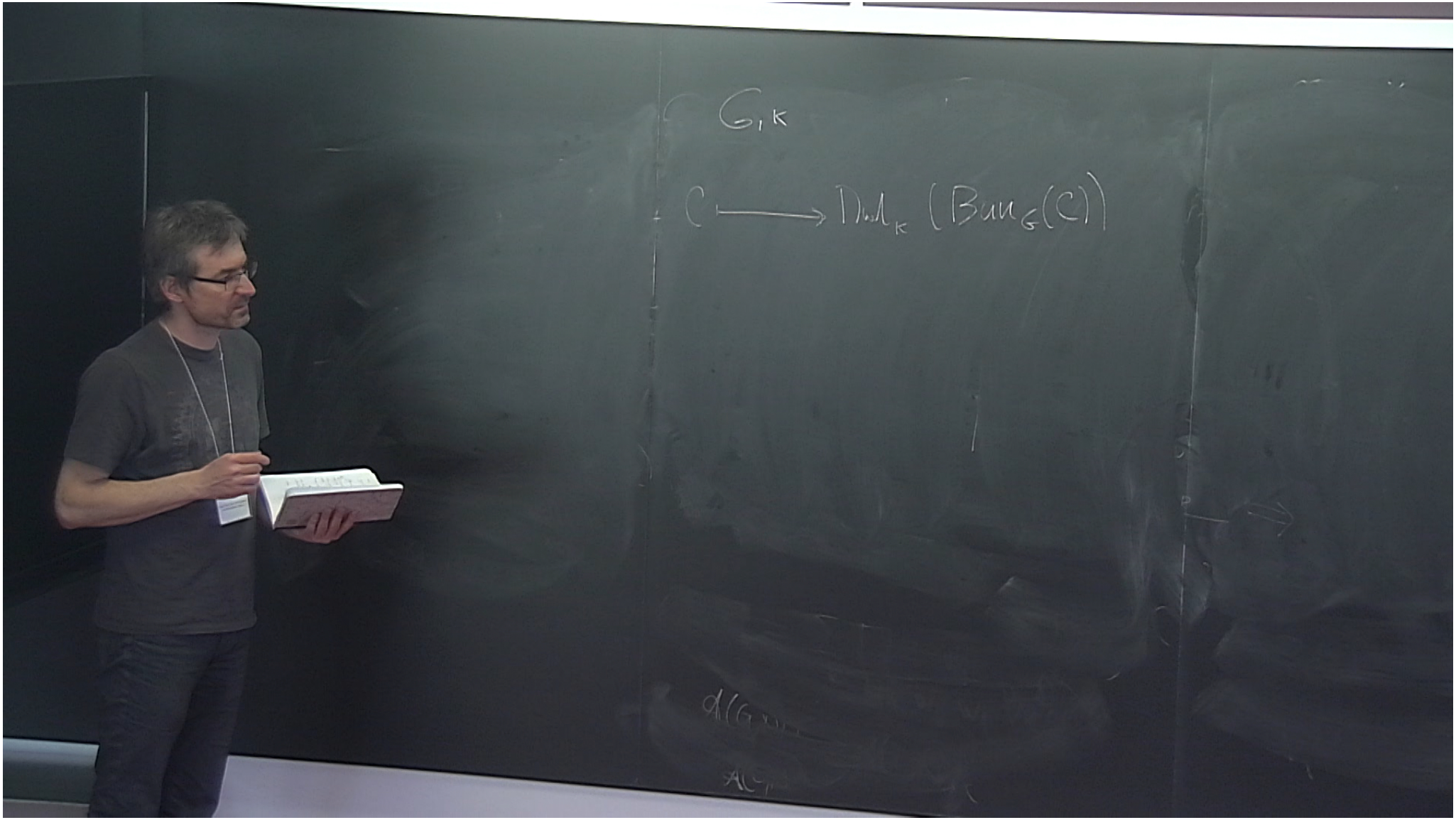
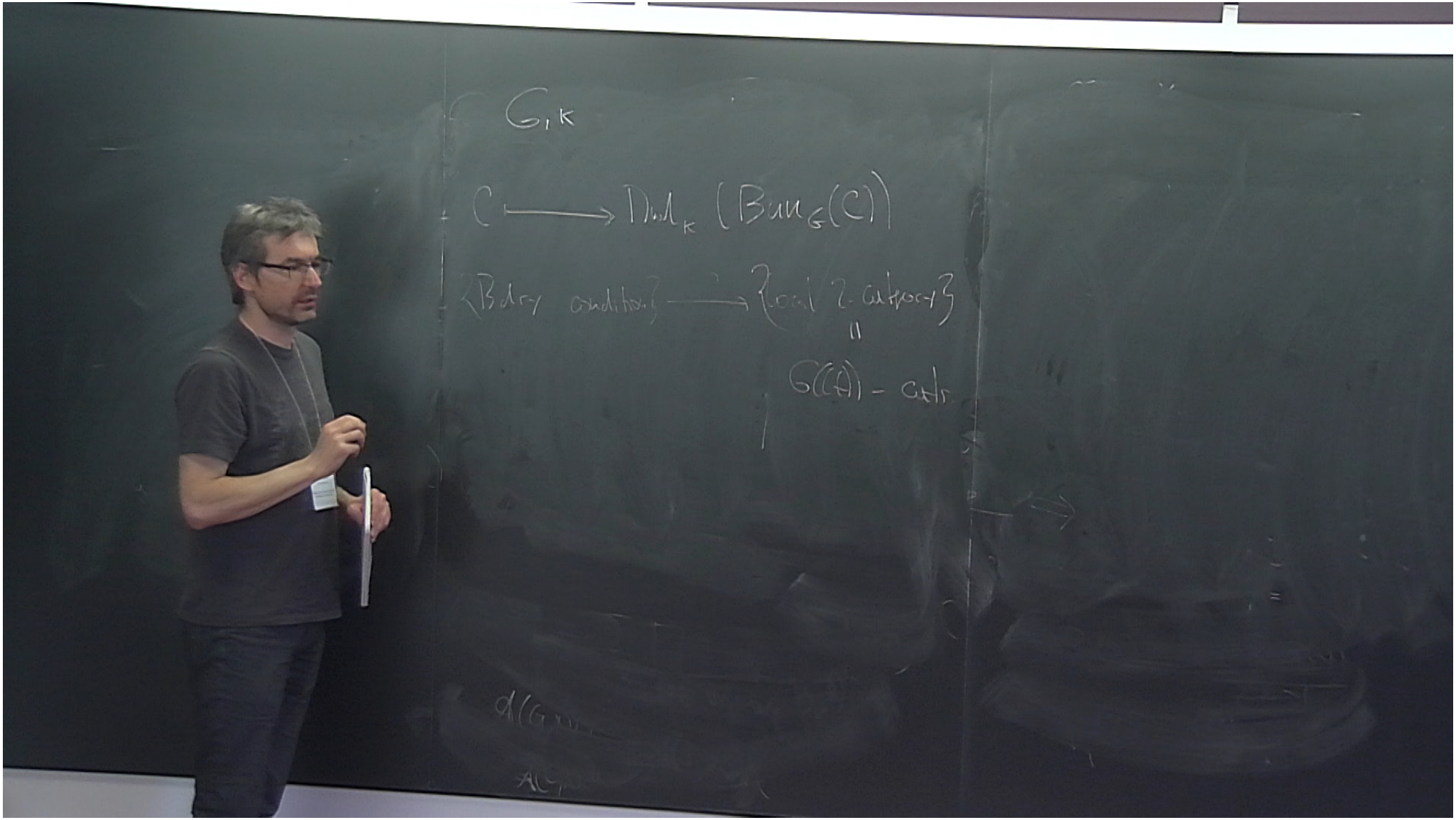
Title: Discussion 1

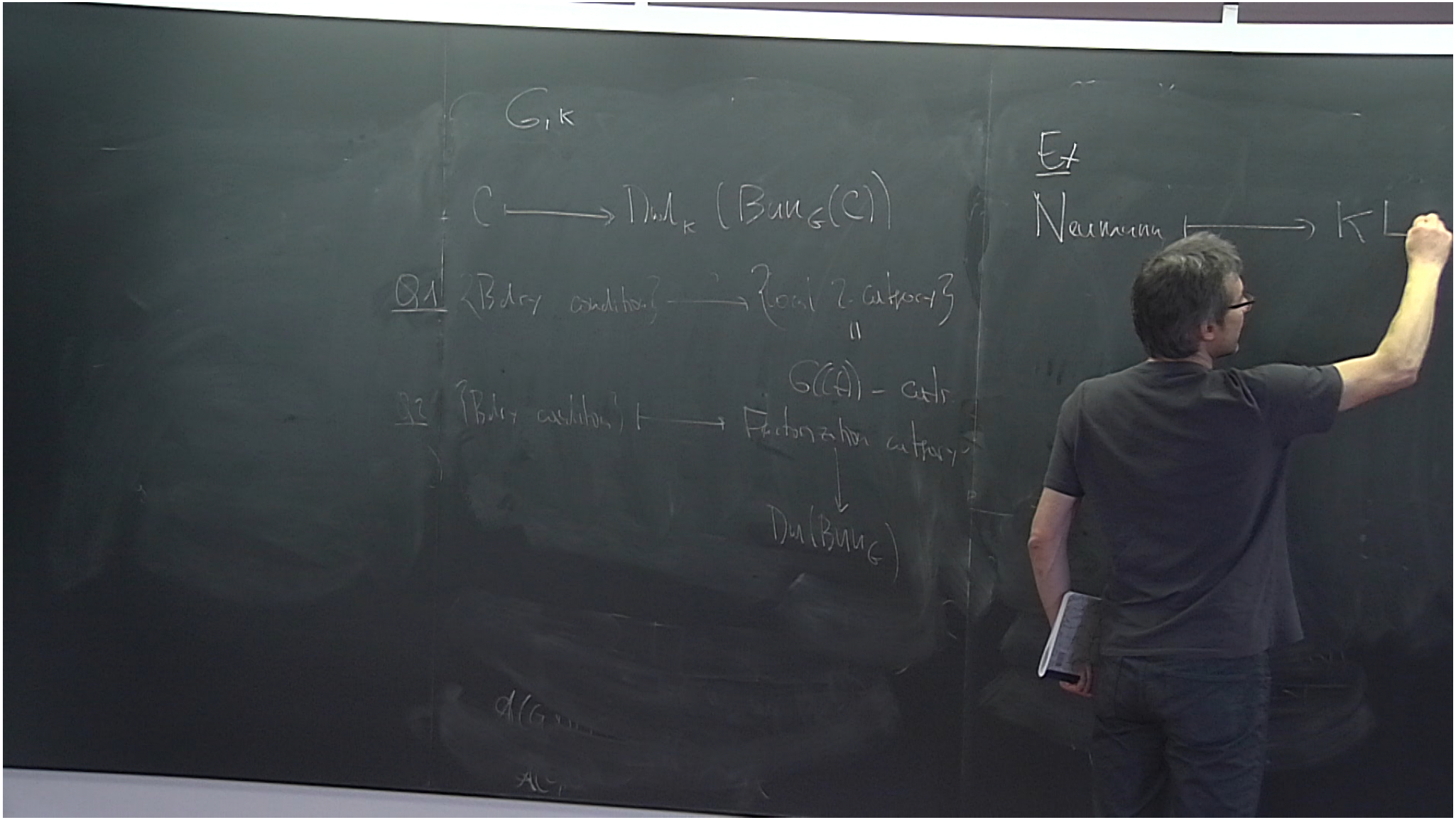
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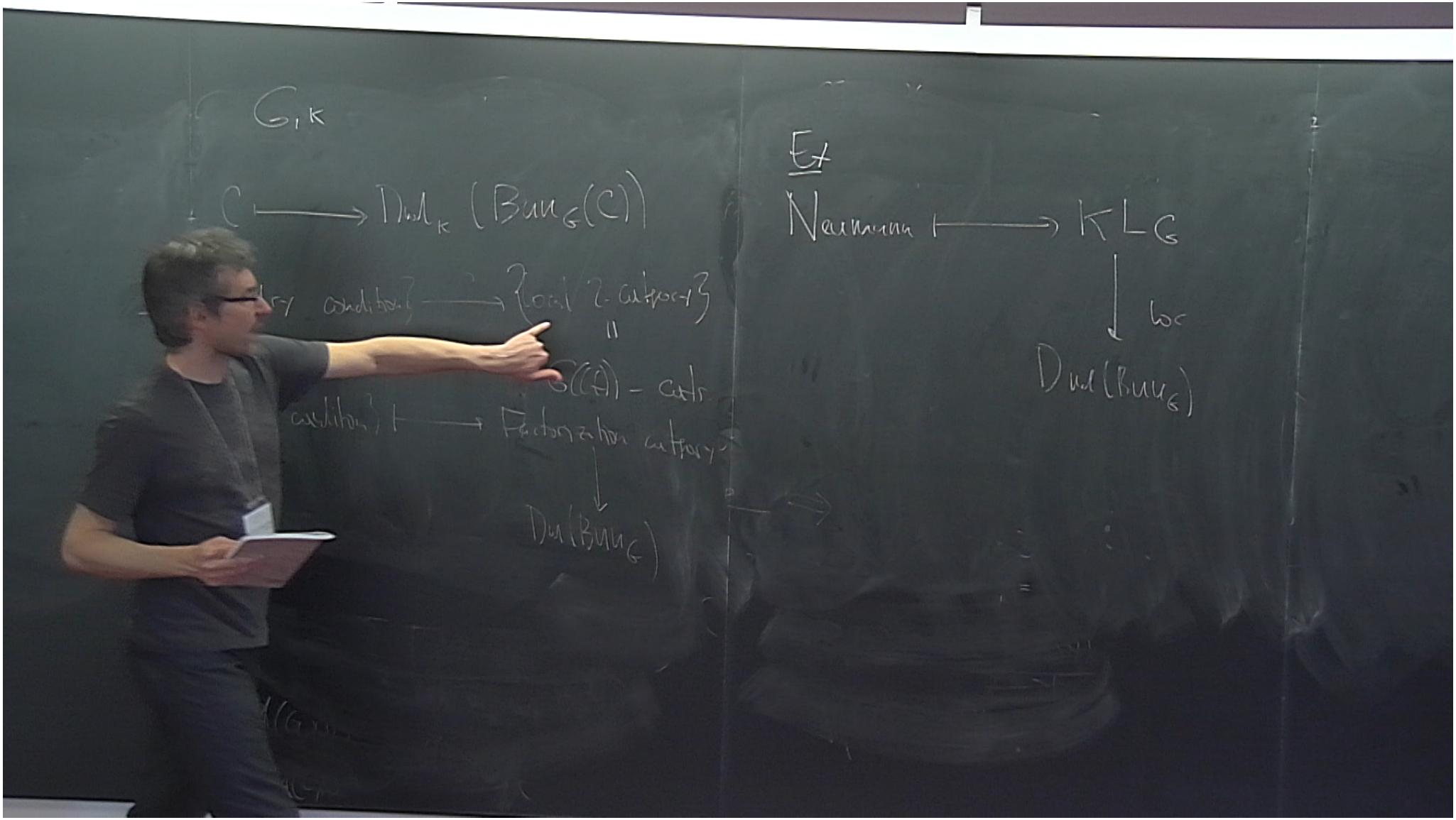
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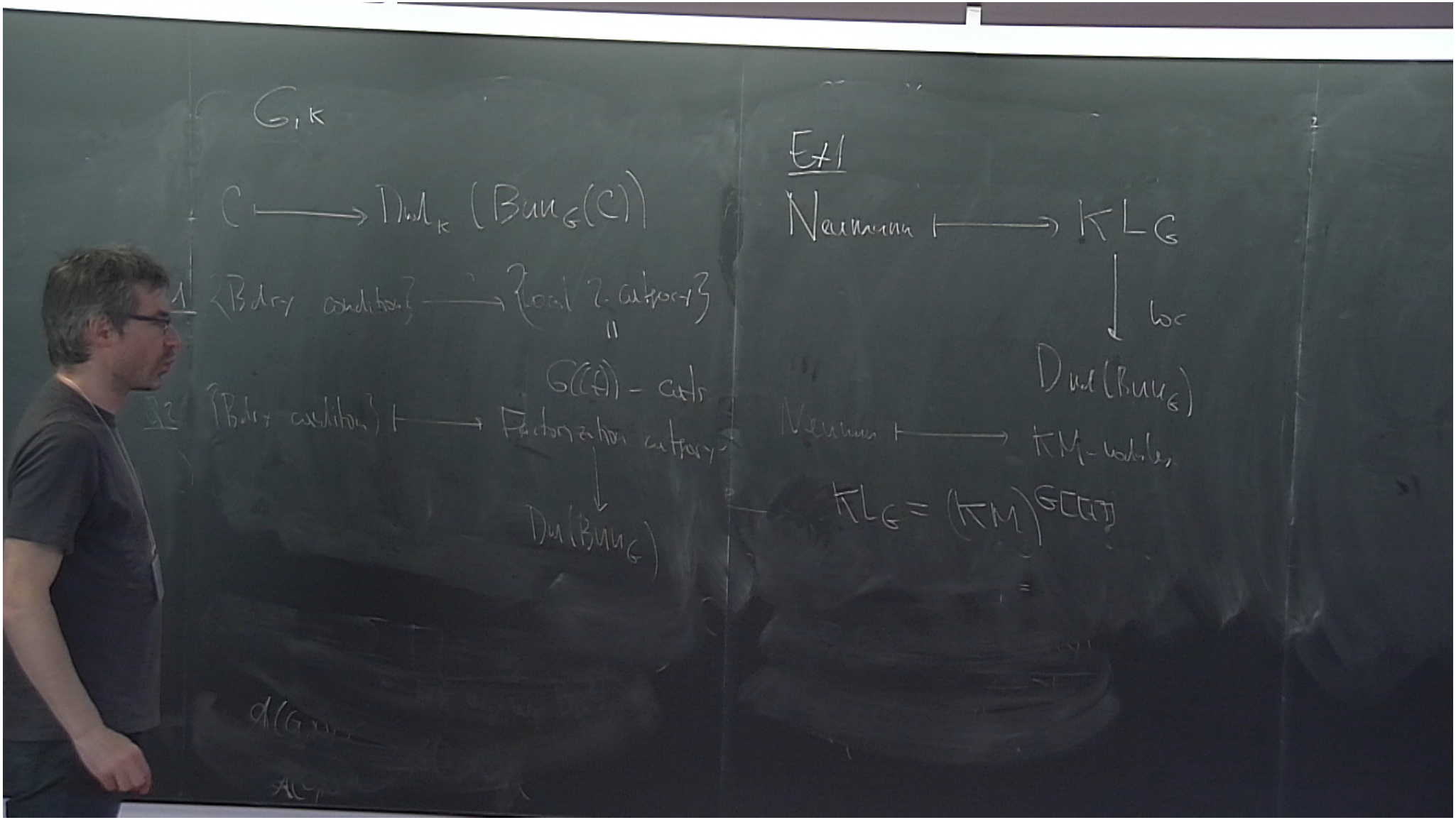
Abstract:

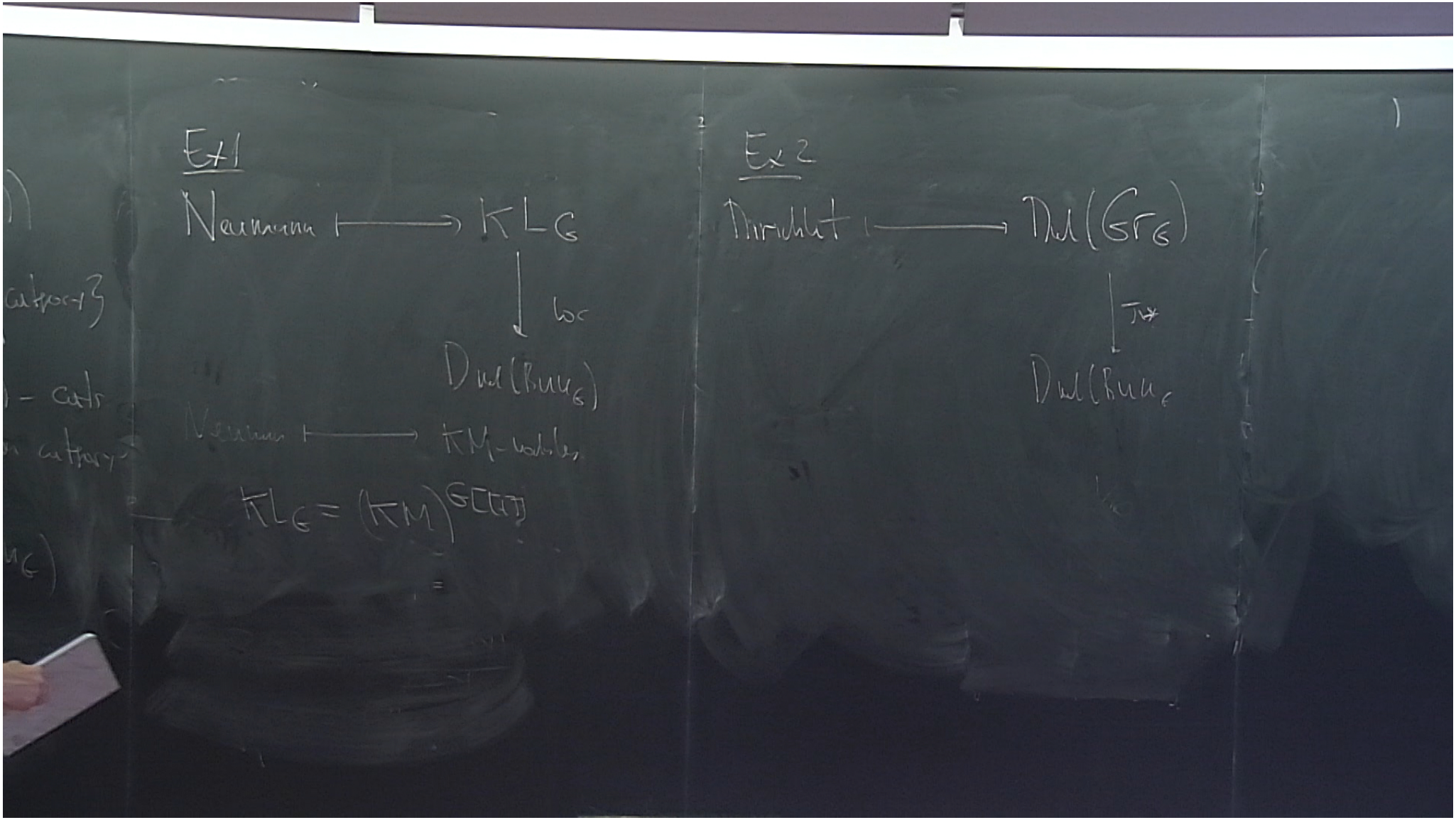

G, K
C ⟶ D-mod_K (Bun_G(C))

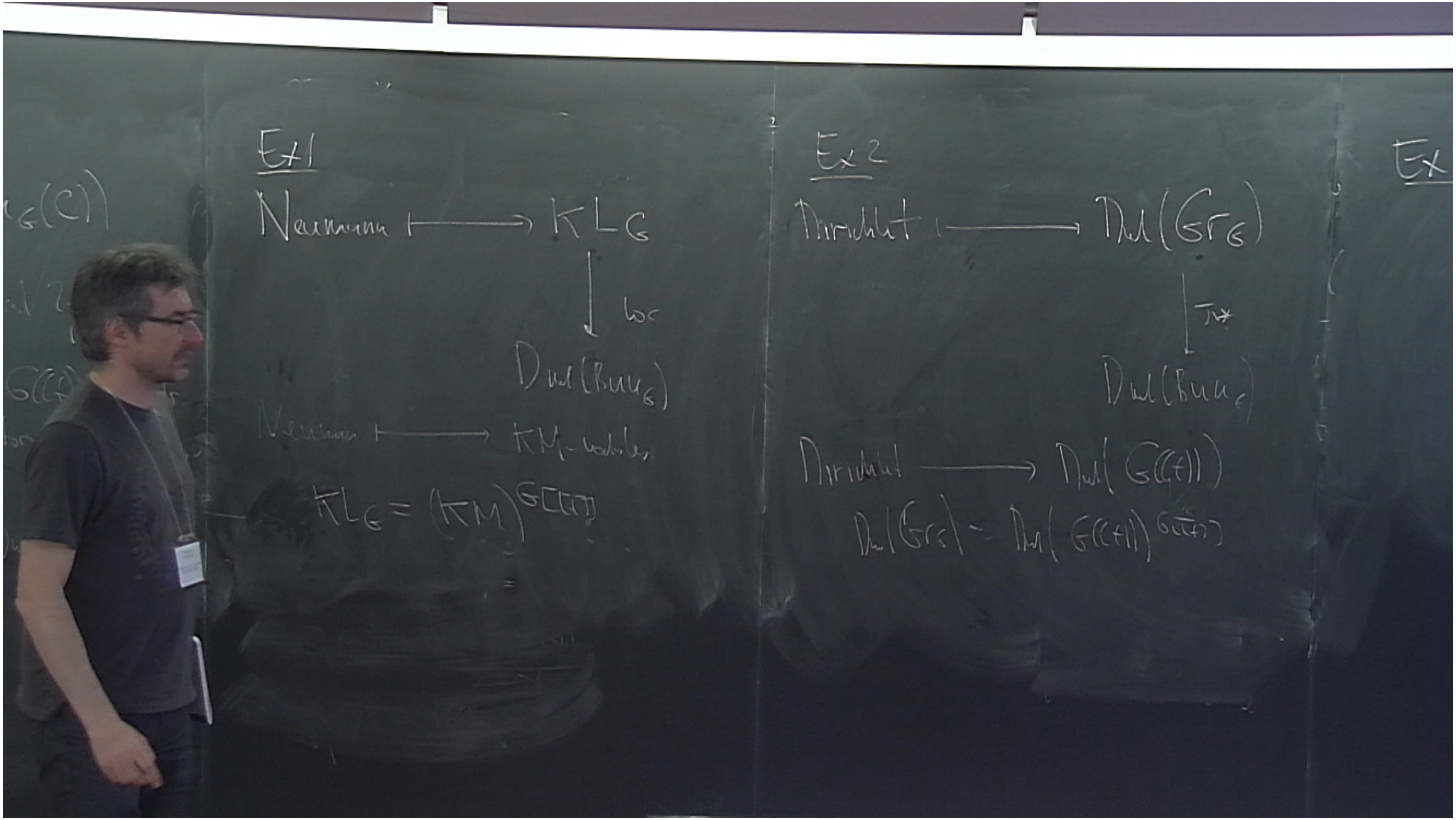

G, k
C ⟶ D^b_k (Bun_G(C))
{Bdry conditions} ⟶ {Local 2-category}
=
G(A) - Ctlr

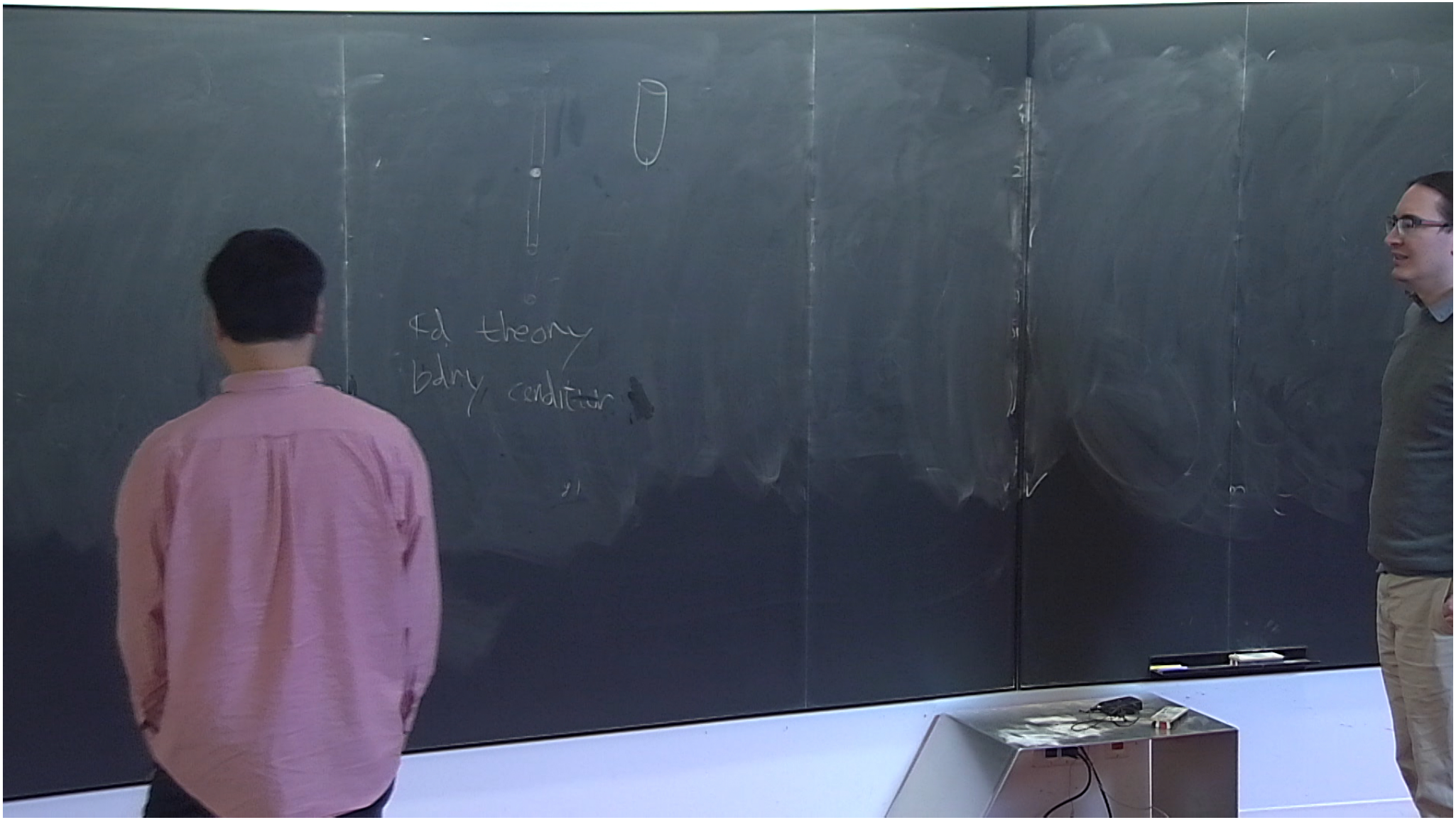

G, k
C ⟶ Dmf_k (Bun_G(C))
Et
Neumann ⟶ KL
Q1 {Bdry condition} ⟶ {Local 2-category}
=
G(A) - Gtls
Q2 {Bdry condition} ⟶ Factorization category
Dm(Bun_G)

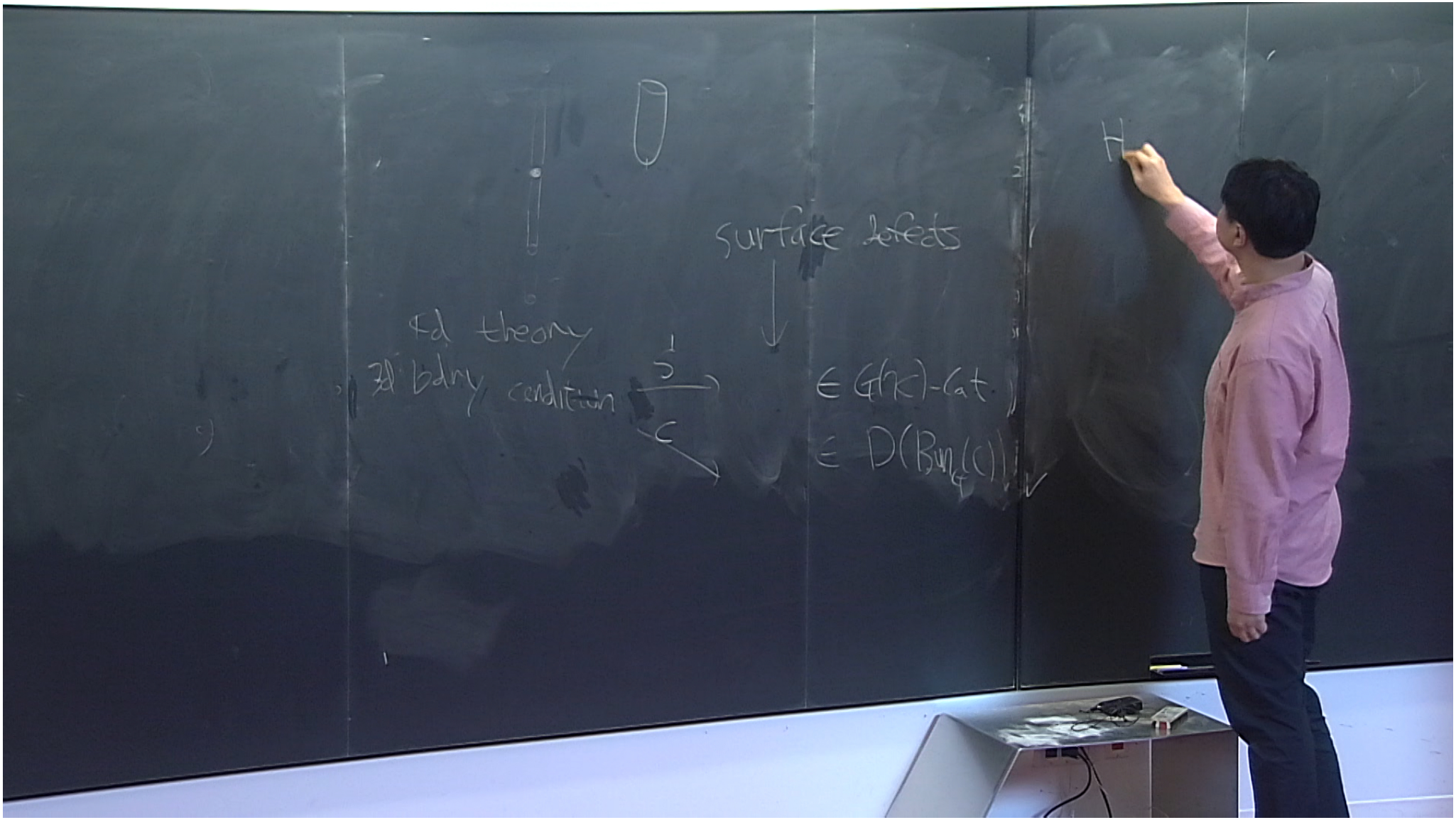

G, k
C ⟶ Dm_k (Bun_G(C))
Et
Neumann ⟶ KL_G
loc
Dm(Bun_G)
Dm(Bun_G)

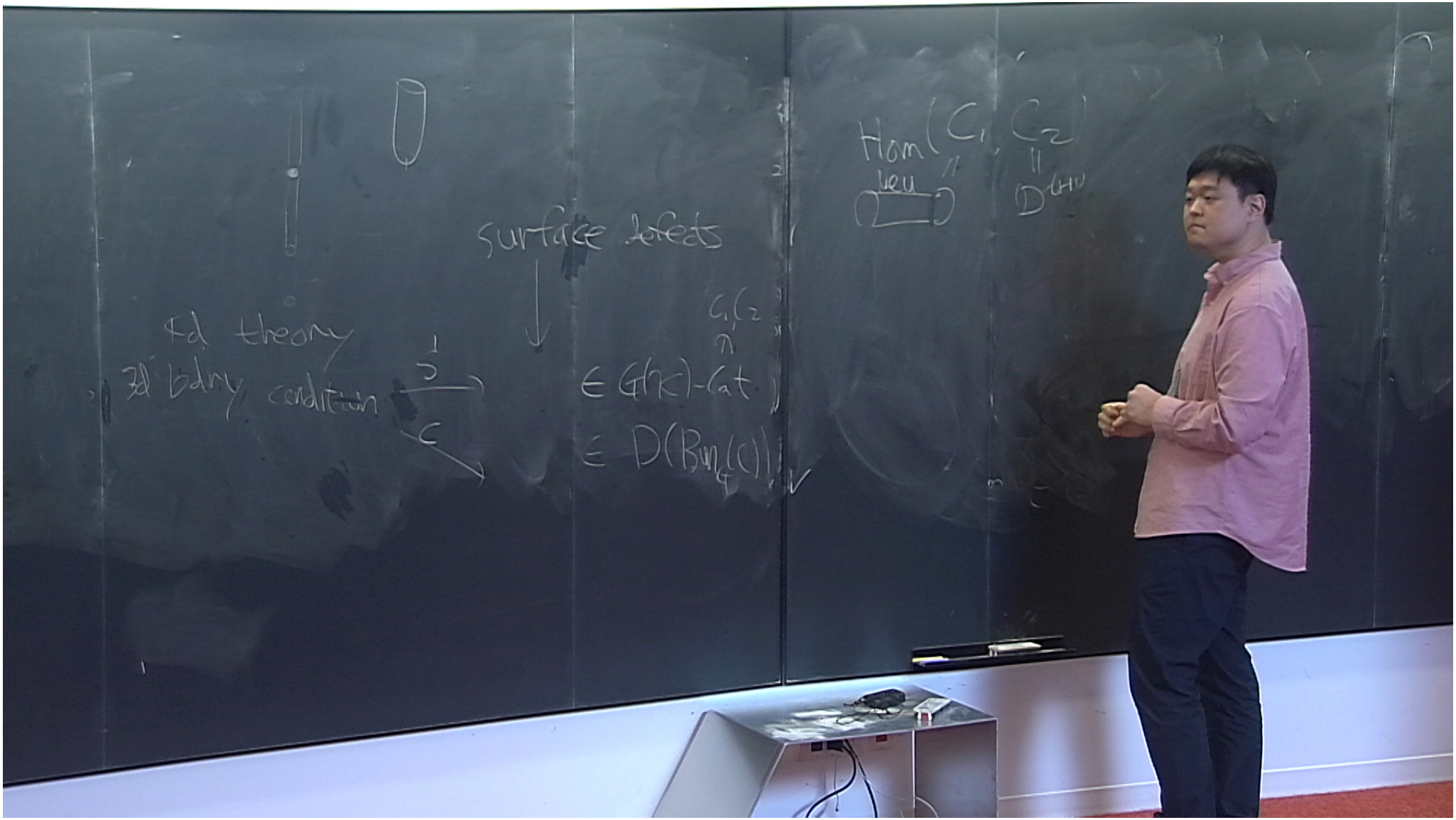

G, k
Et1
Neumann
KL_G
loc
Dmd(Bun_G)
KM - modules
KL_G = (KM)^G((t))

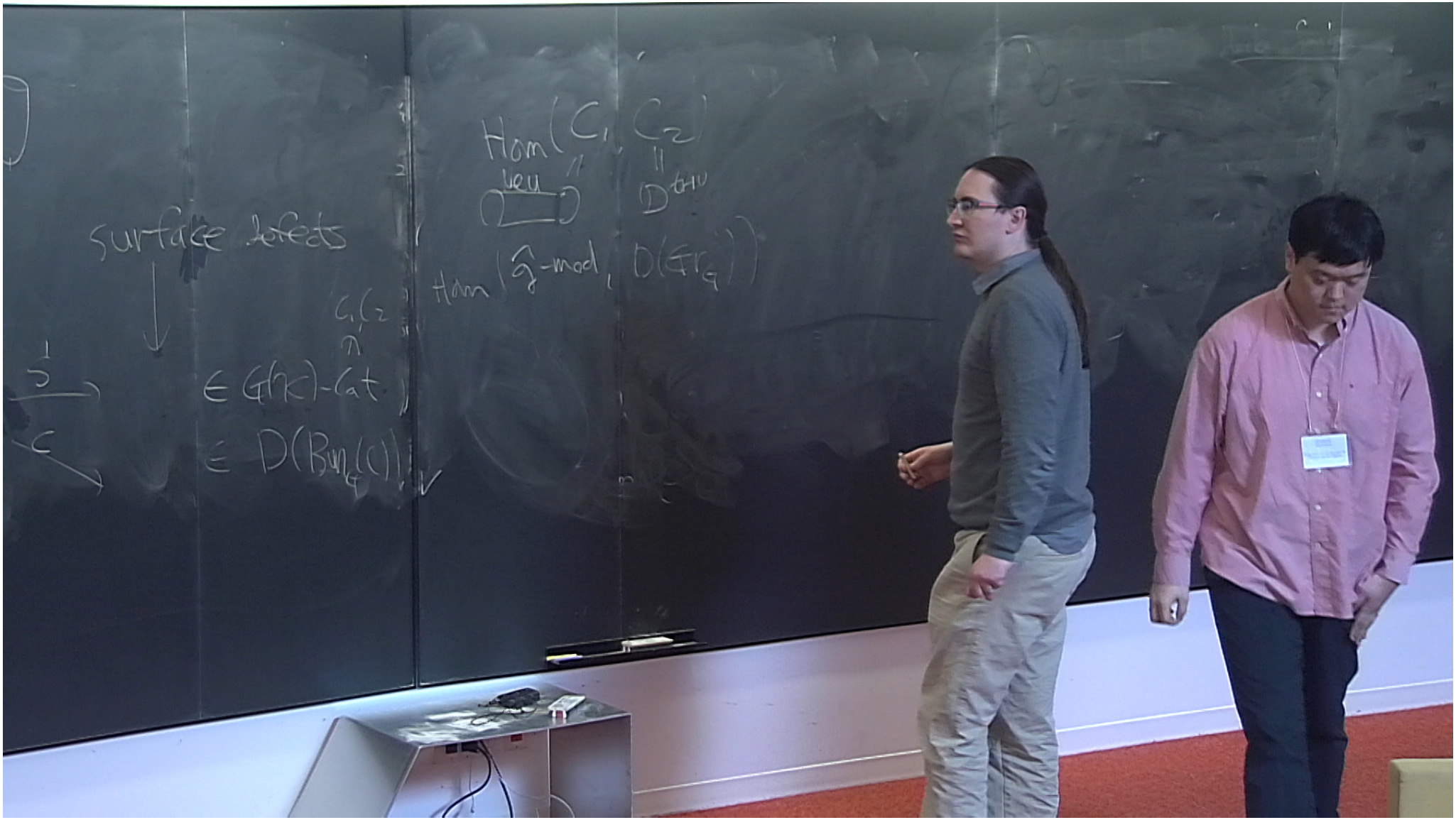

Ex 1
Ex 2

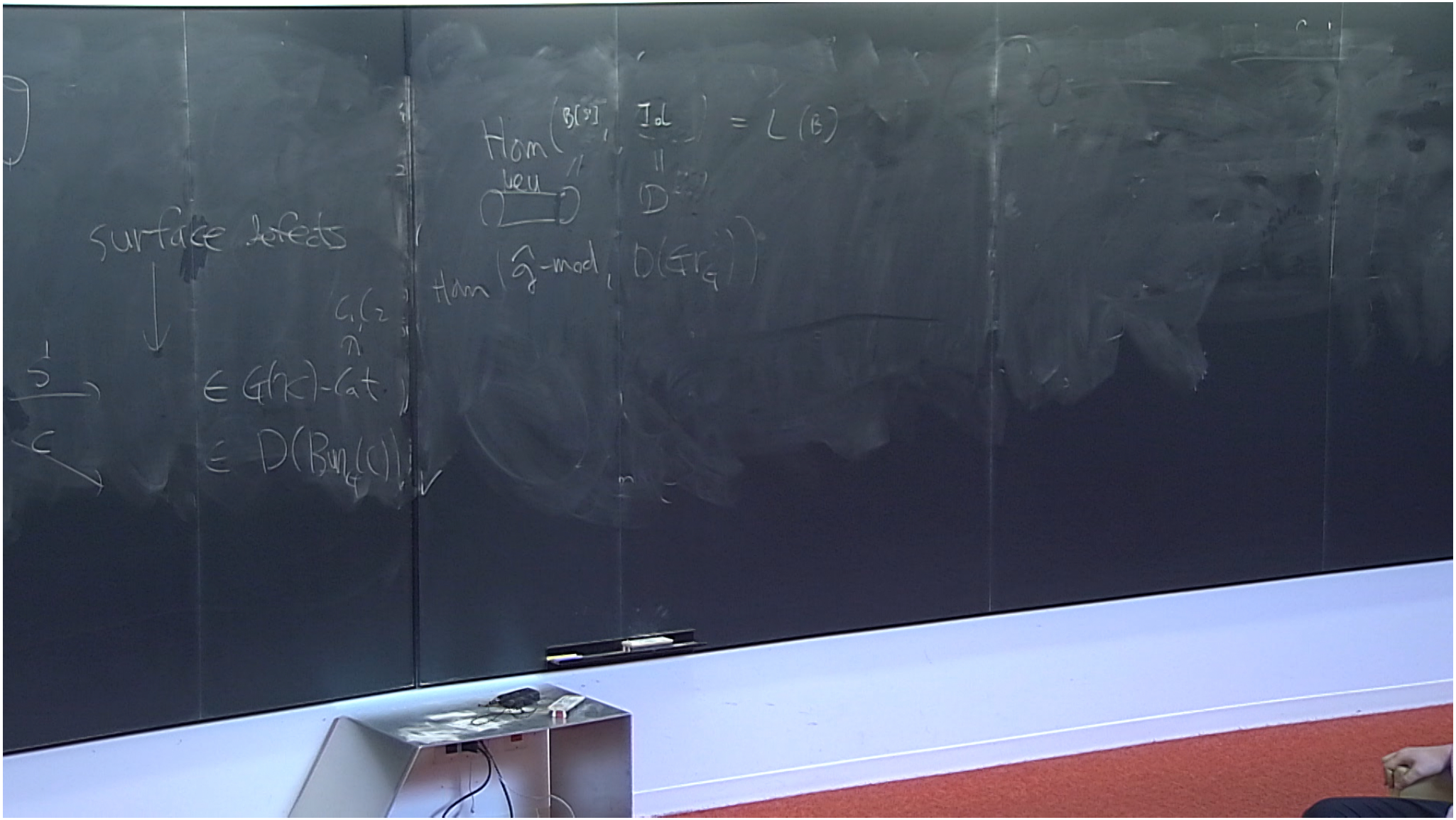

Ex 1
Neumann
KL_G
loc
Dual(Ruelle_G)
KL_G = (KM)^{G(t)}
Ex 2
Dirichlet
Dual(Gr_G)
Dual(Ruelle_G)
Dirichlet
Dual(G(t))
Dual(Gr_G) = Dual(G(t))^{G(t)}
Ex

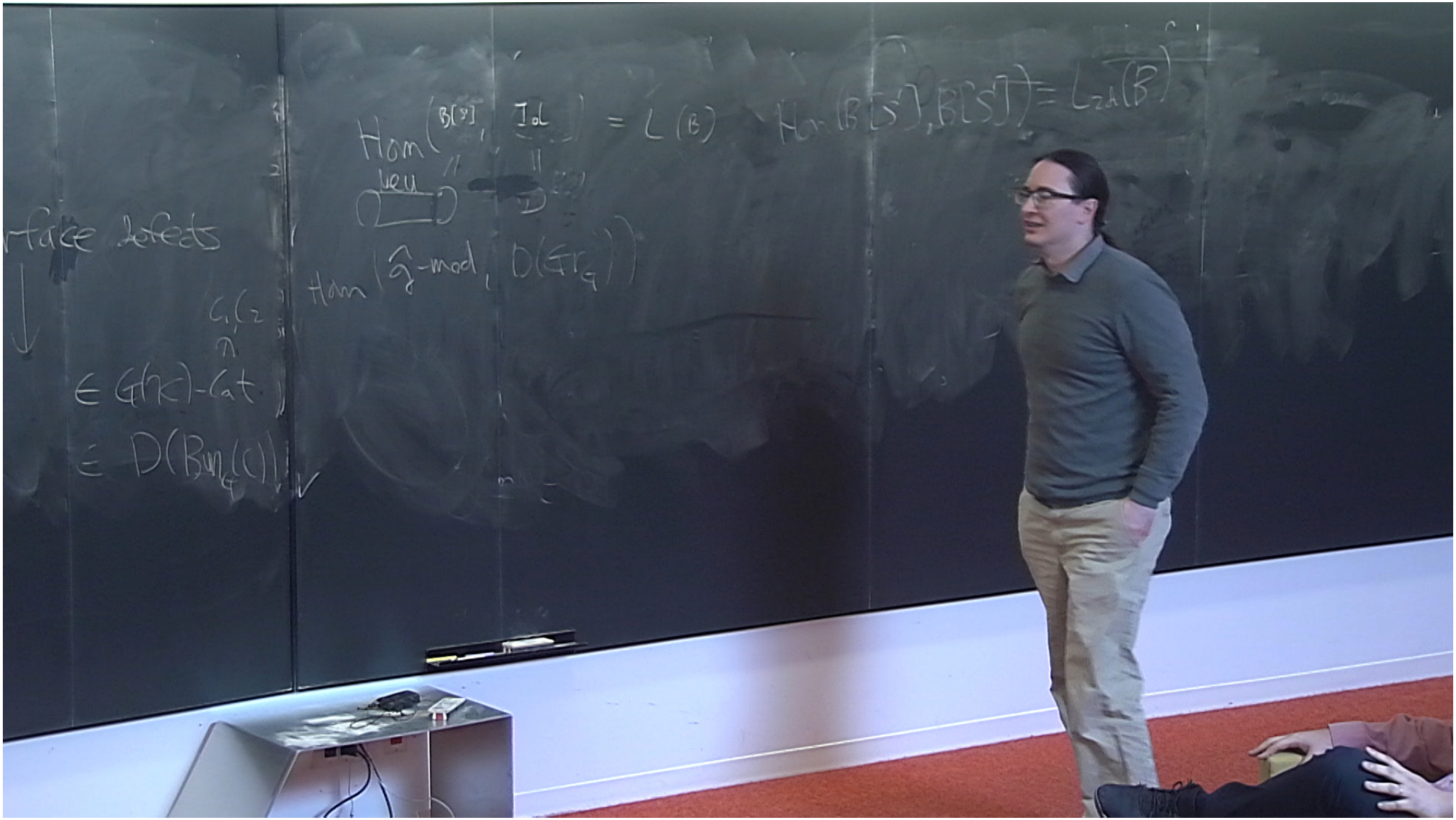

fd theory
bdry condition

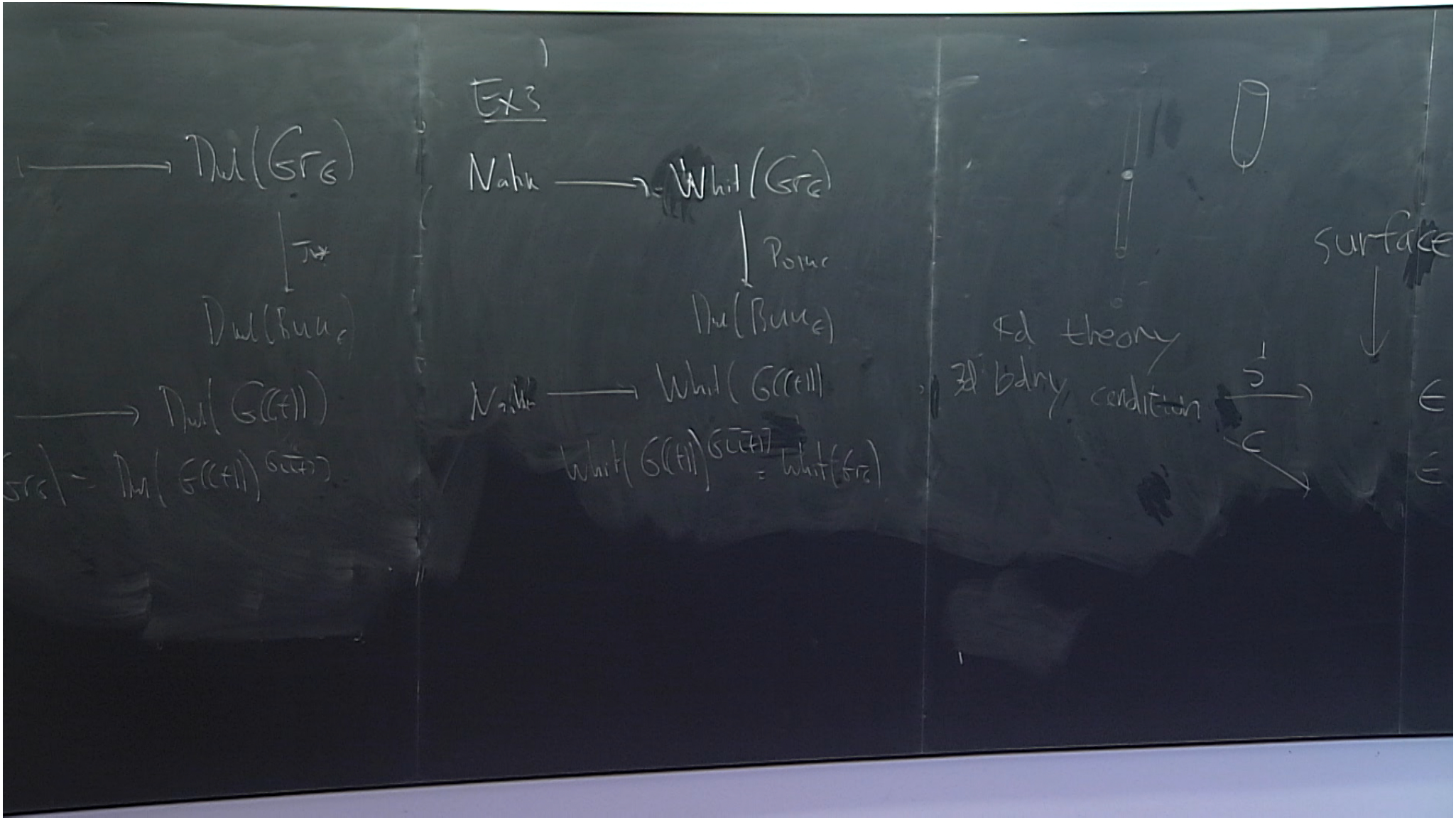

surface defects
4d theory
3d bdry condition
$\in G(K)$-Cat
$\in D(\mathrm{Bun}_G(C))$

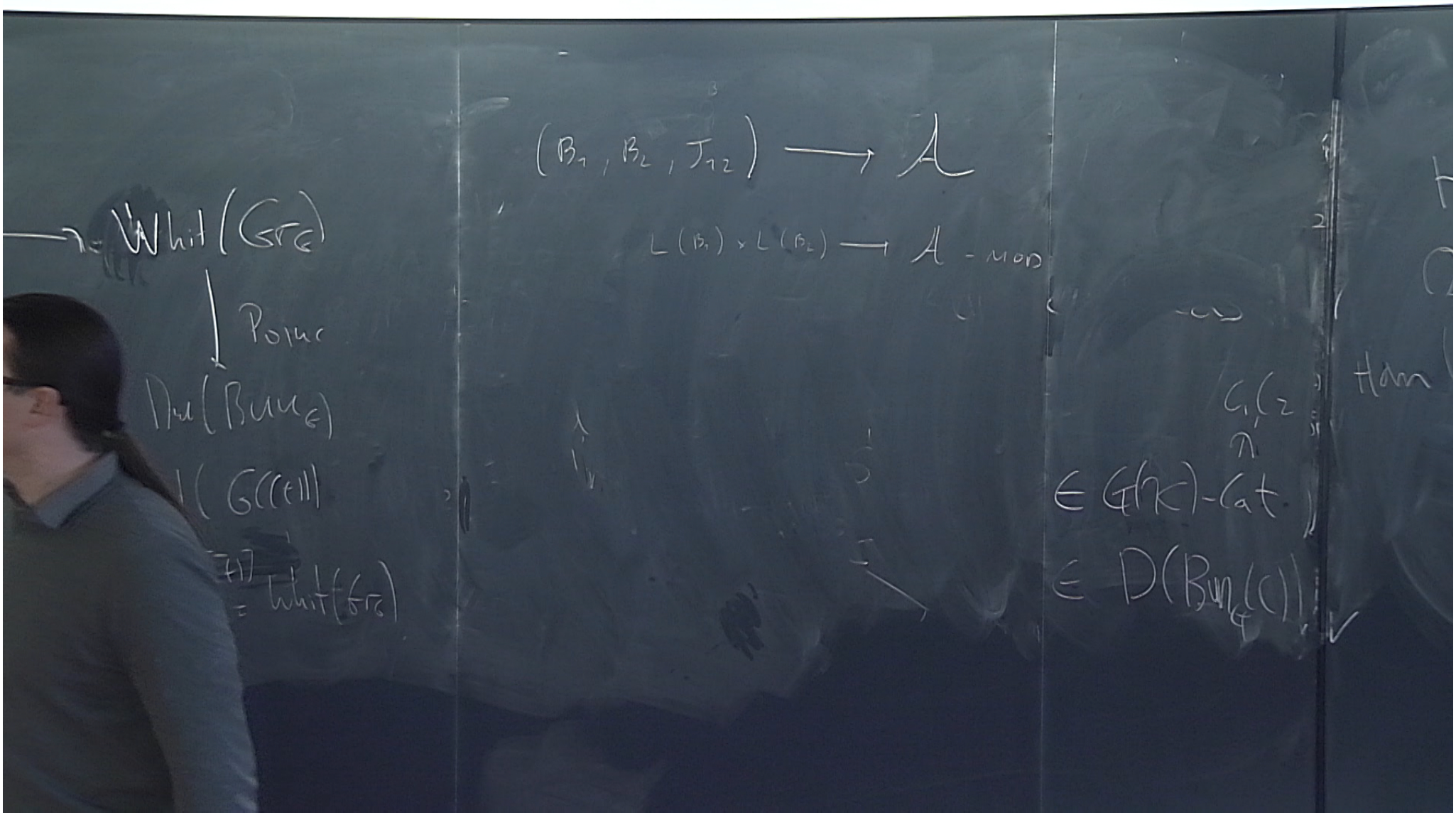

surface defects
4d theory
3d bdry condition
Hom(C1, C2)
vect
D^bHW

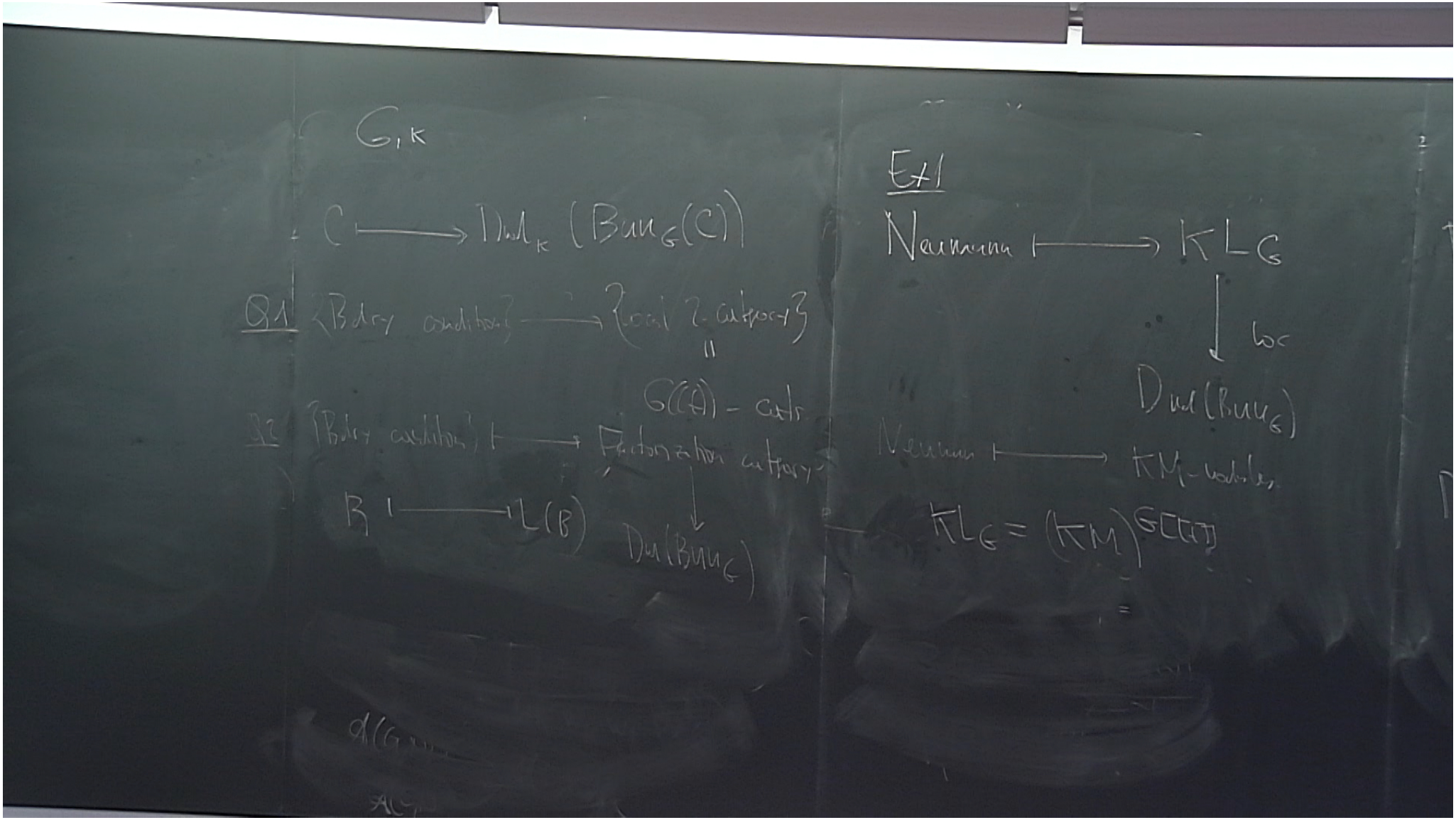

surface defects
Hom(C1, C2)
Hom(ĝ-mod, D(Gr_G))

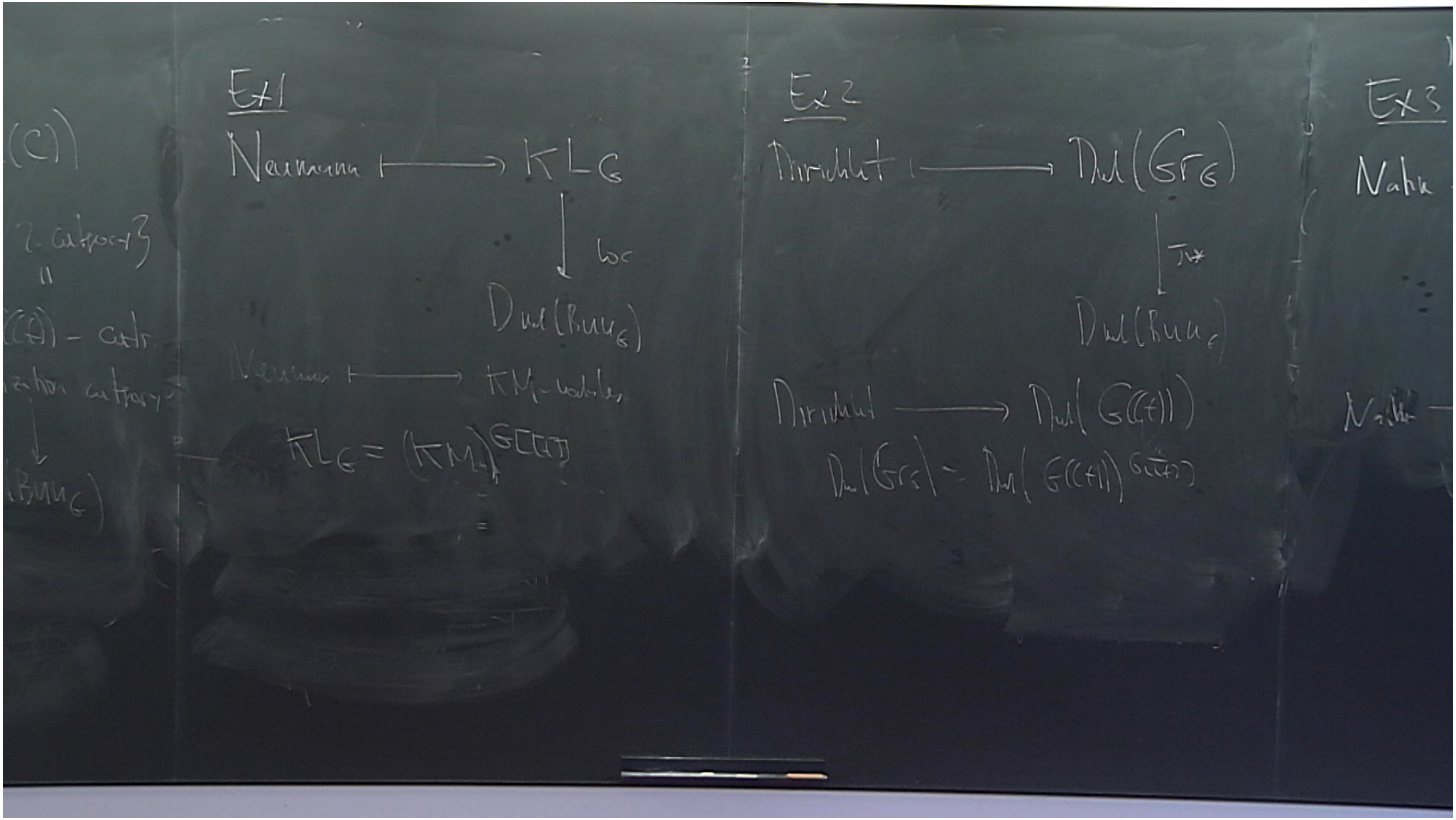

surface defects
$\in G(K)\backslash Gr$
$\in D(Bun_G(C))$
$\mathrm{Hom}(\mathcal{B}[\delta], \mathcal{I}_{\mathcal{L}}) = L(\mathcal{B})$
$\mathrm{Hom}(\hat{\mathfrak{g}}\text{-mod}, D(Gr_G))$

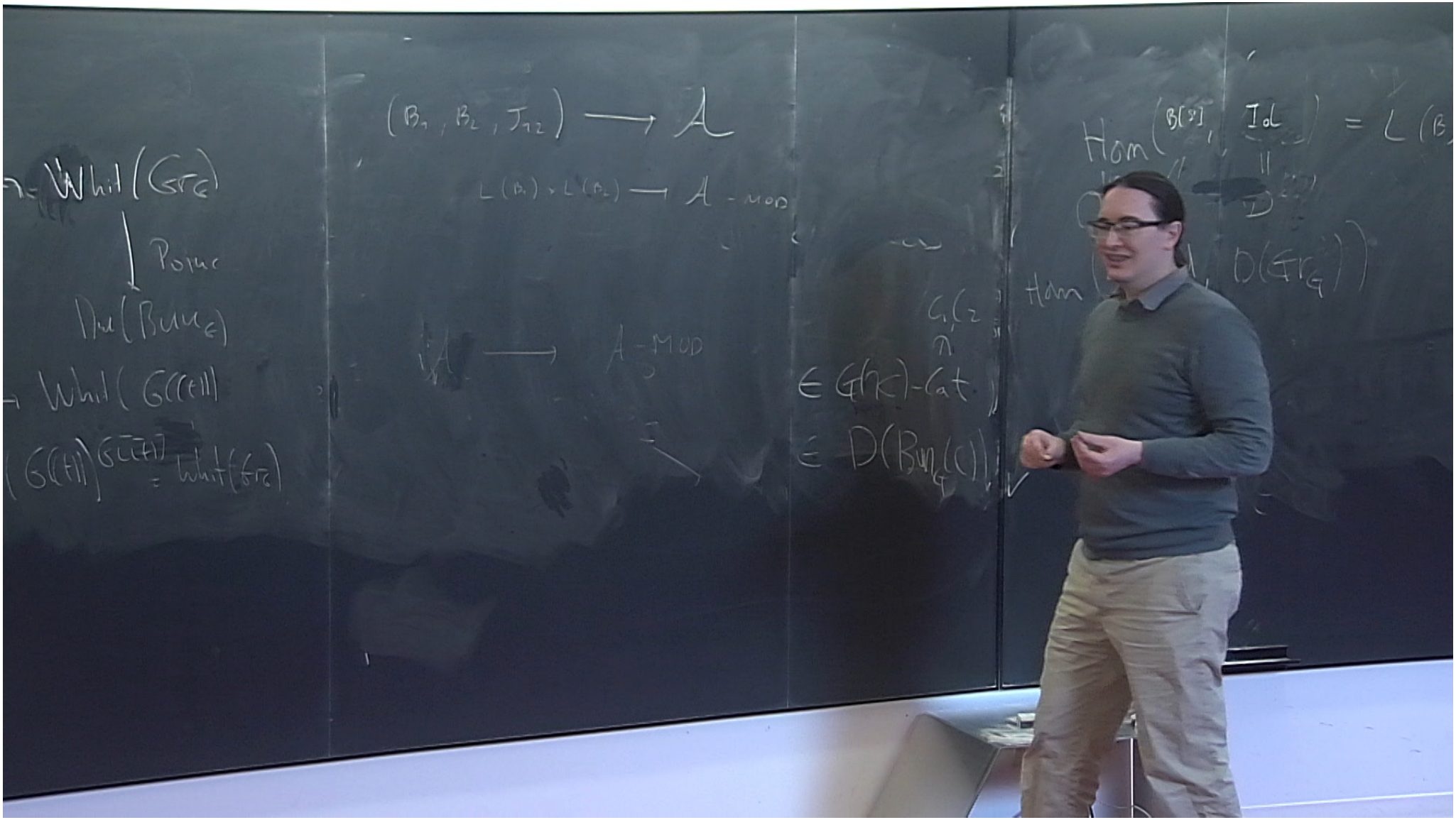

Hom(B[x], Id) = L(B)
Hom(B[S], B[S]) = L_{ZA}(B)
Hom(ĝ-mod, D(Gr_G))
∈ G(K)-Gat
∈ D(Bun_G(C))

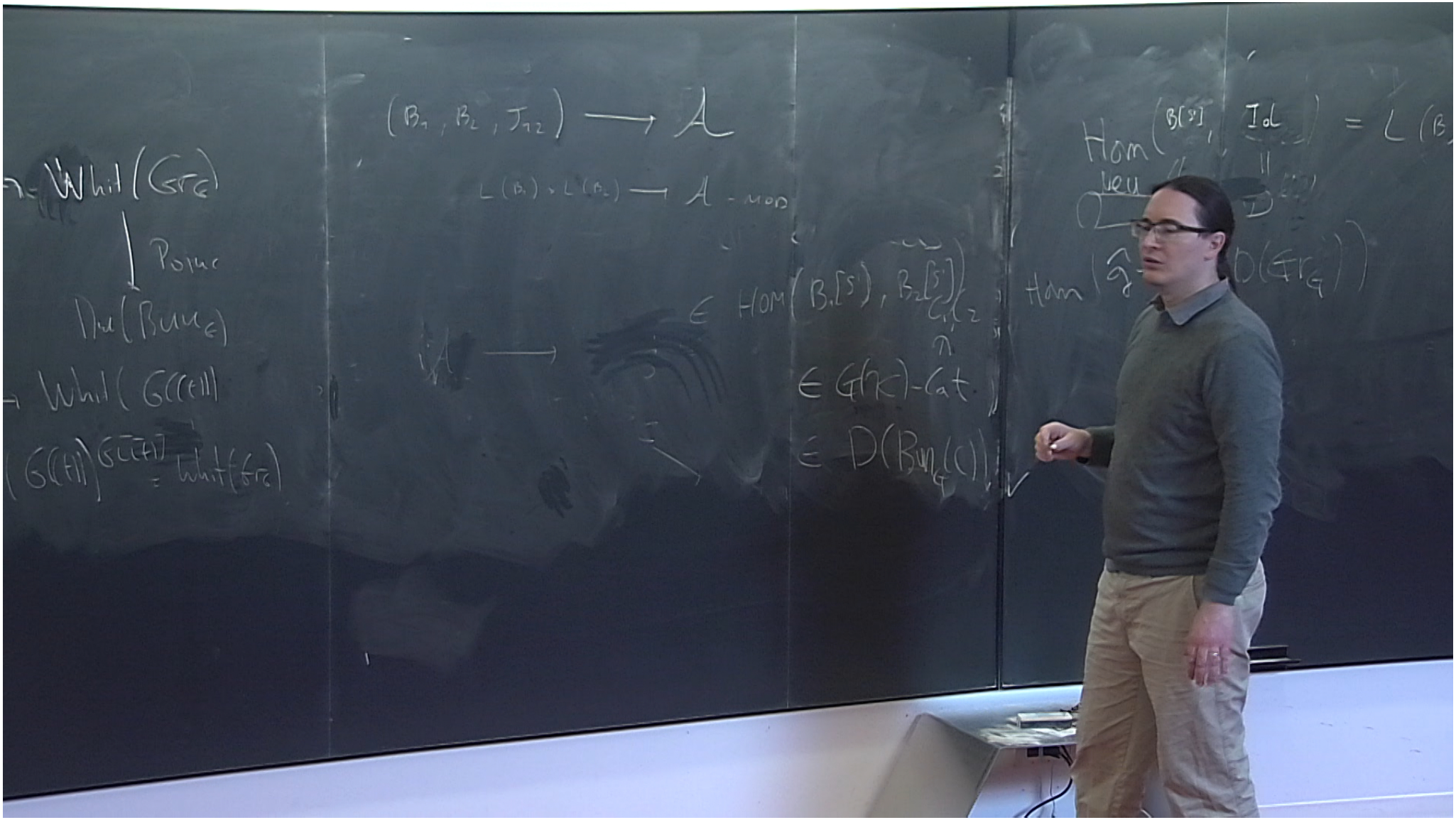

Ex 3
surface
3d theory
3d bdry condition

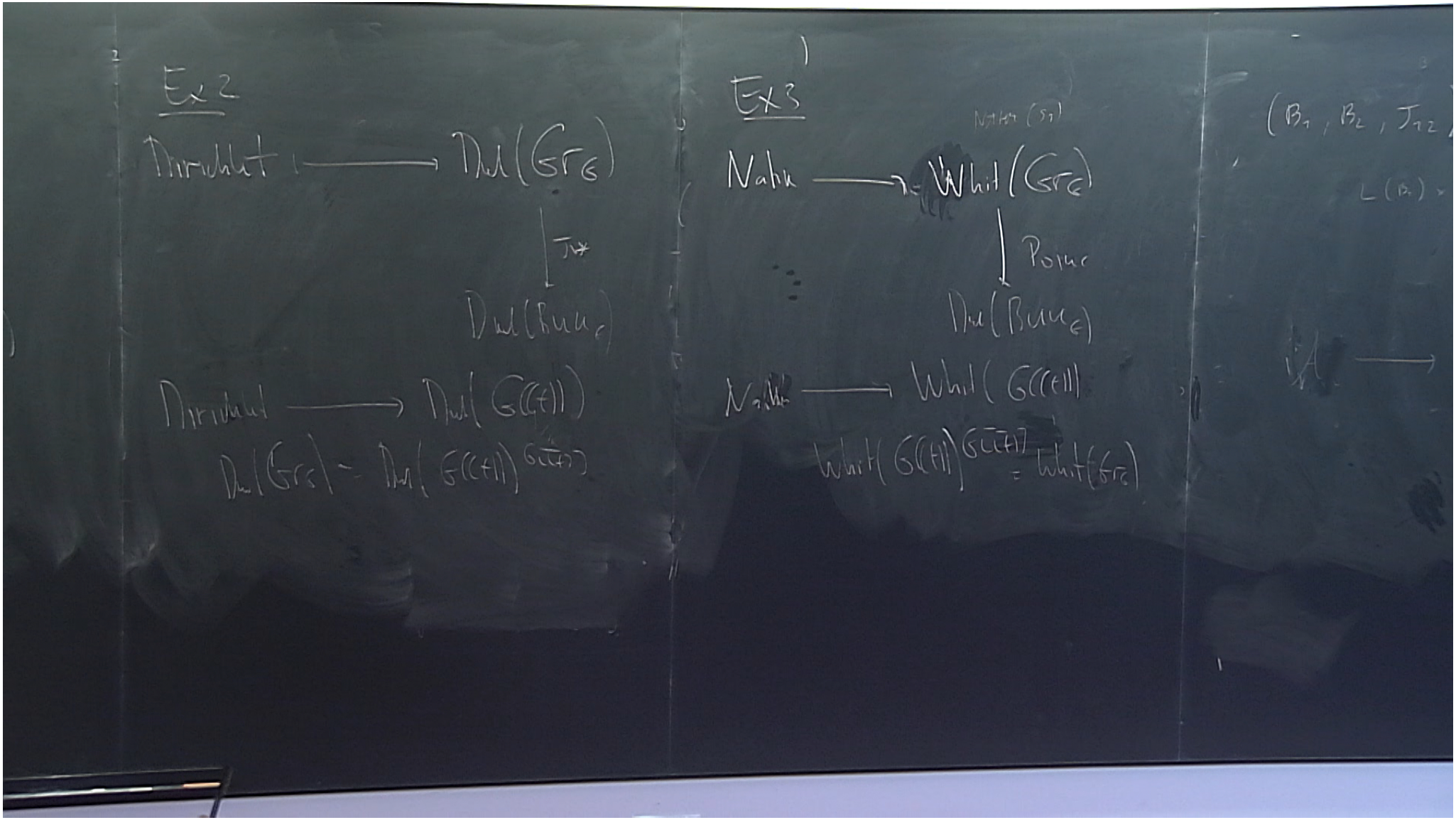

$(B_1, B_2, J_{12}) \longrightarrow \mathcal{A}$
$L(B_1) \times L(B_2) \longrightarrow \mathcal{A}$-MOD
Whit(GrG)
Poinc
$\in G(\mathcal{K})$-Gat
$\in D(\mathrm{Bun}_G(C))$

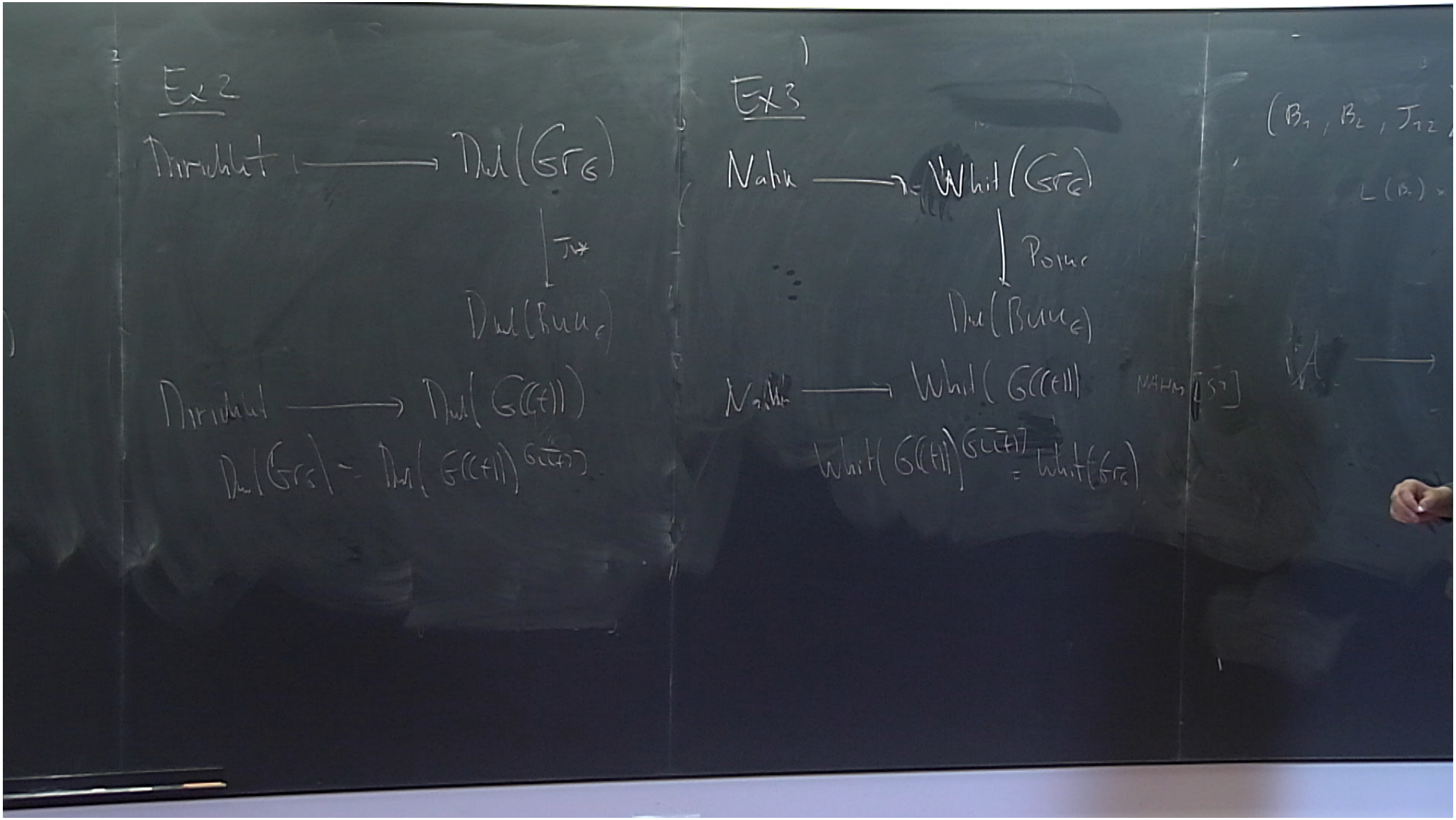

G, k
C ⟶ Dul_k (Bun_G(C))
Q1
Bdry condition
Local 2-category
G(A) - ctrs
Q2
Bdry condition
Factorization category
B ⟶ L(B)
Dul(Bun_G)
E+1
Neumann ⟶ KL_G
loc
Dul(Bun_G)
Neumann ⟶ KM - module
KL_G = (KM)^G(C)

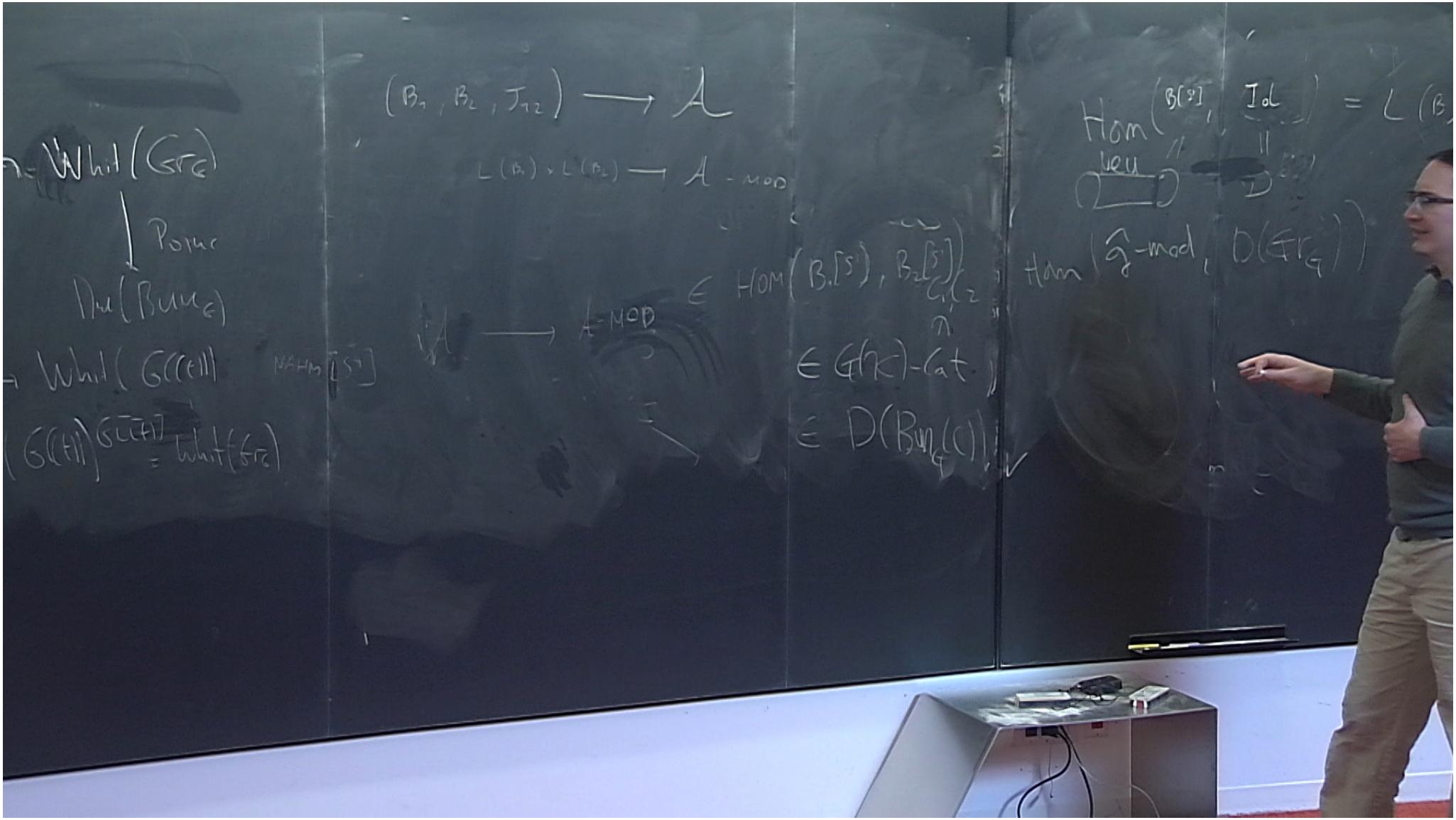

Ex1
Ex2
Ex3

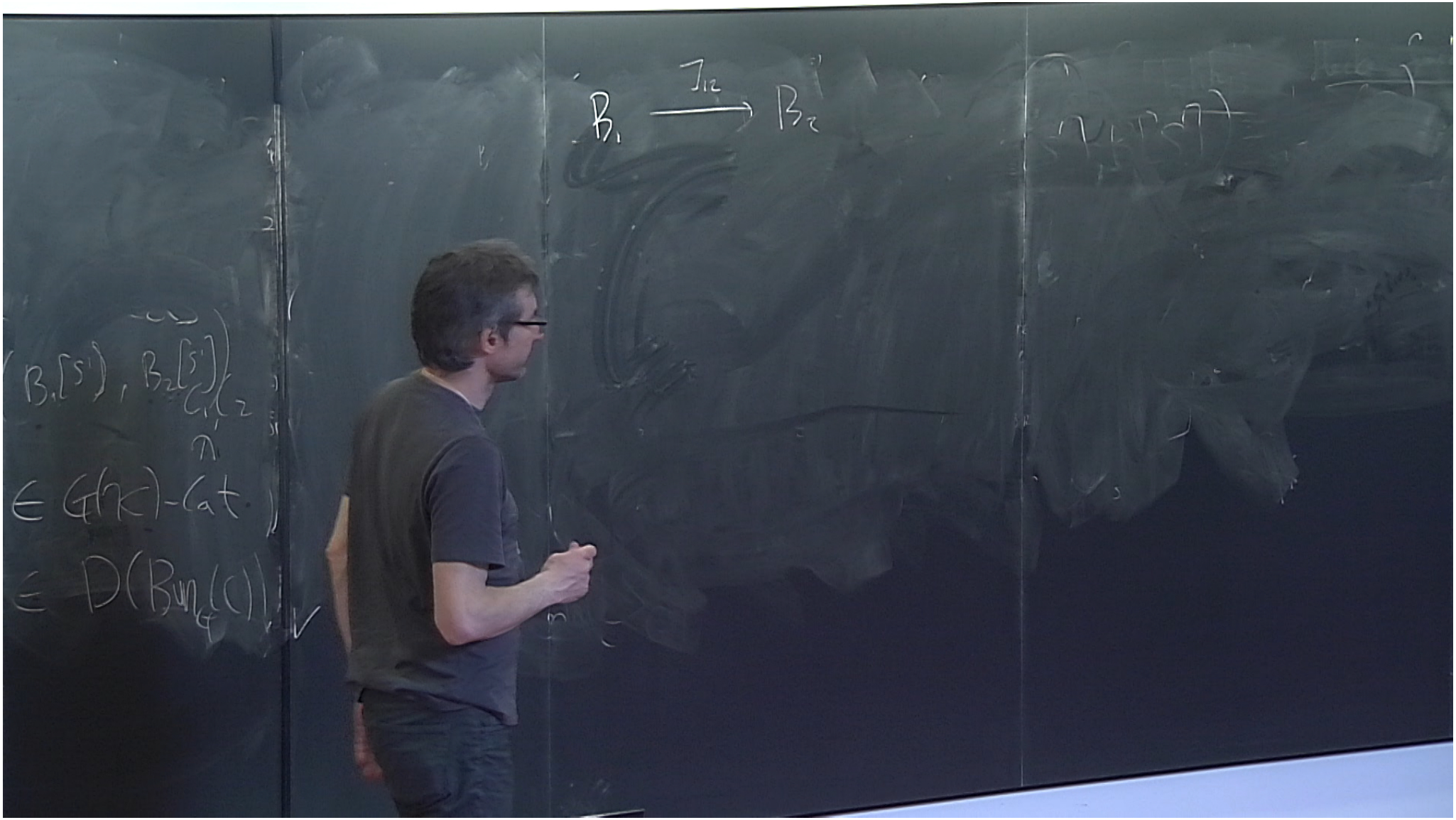

Whit(G,F_G)
Poinc
Dual(Bun_G)
Whit(G((t))
(G((t)))^{G(t)} = Whit(G,F_G)
(B_1, B_2, J_12) → A
L(B_1) ⋆ L(B_2) → A - MOD
A → A - MOD
∈ G(K)-Cat
∈ D(Bun_G(C))
Hom(B[x], Id_L) = L(B
Hom(, D(G,F_G))

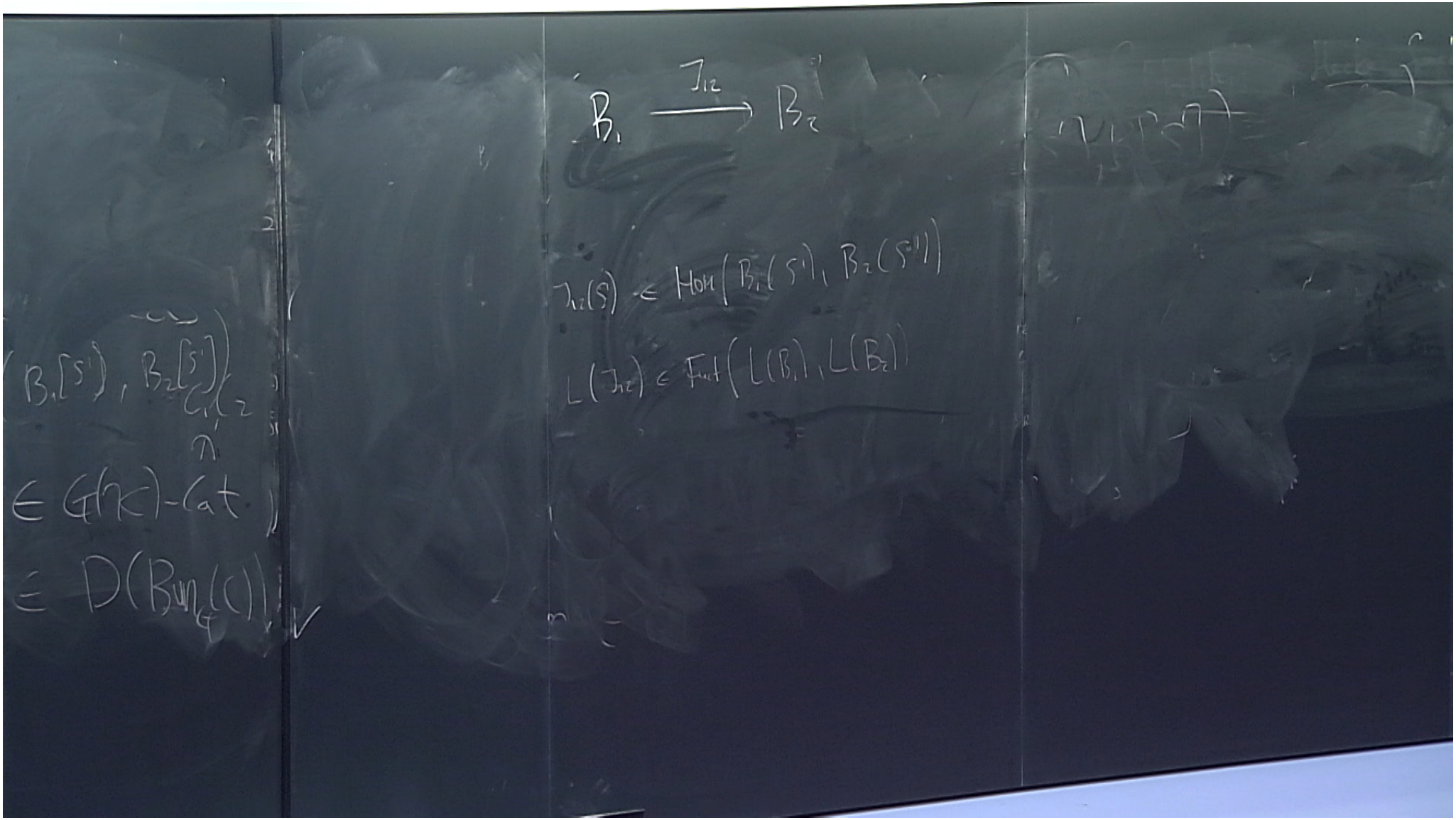


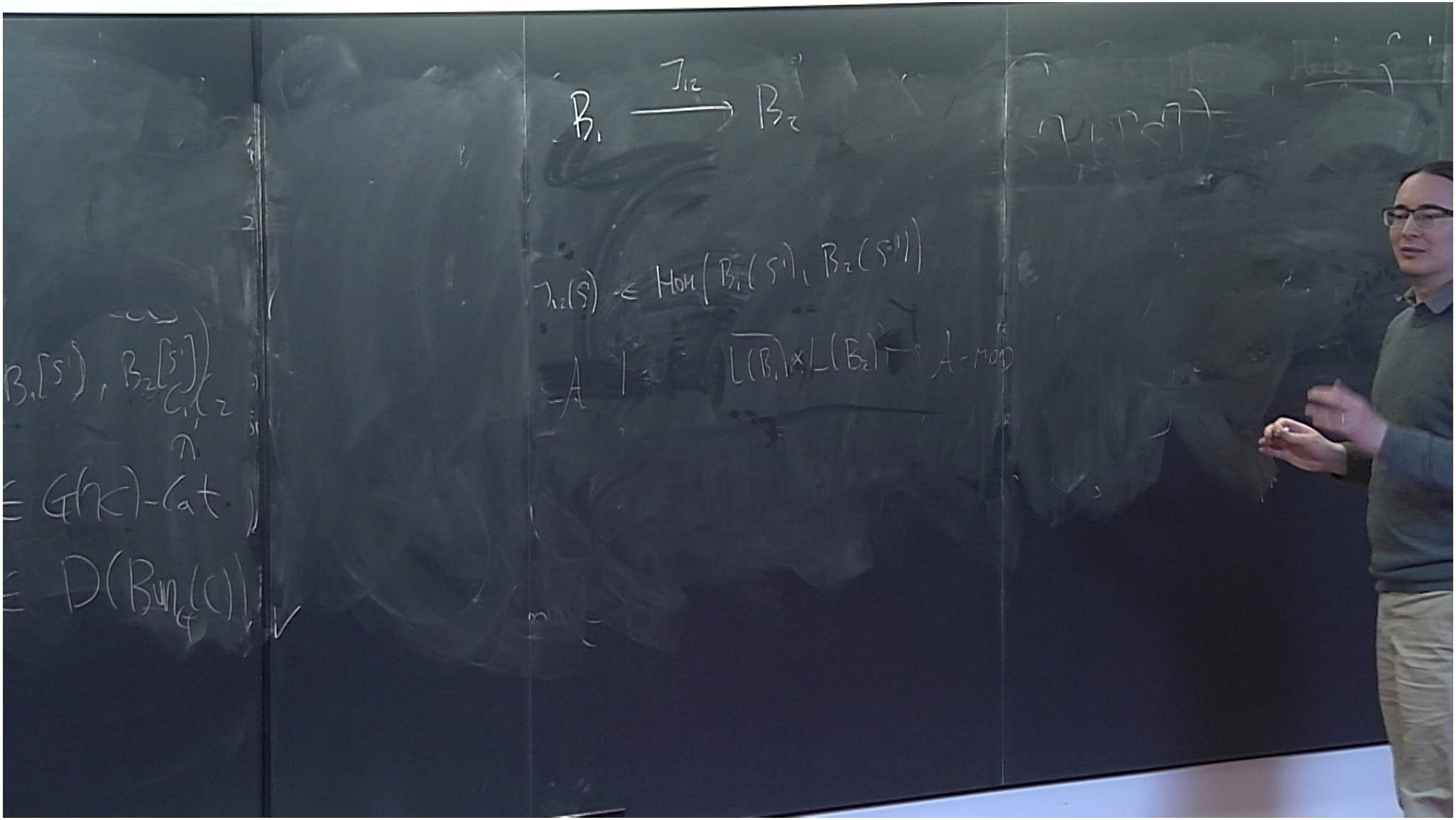

Ex 2
Ex 3

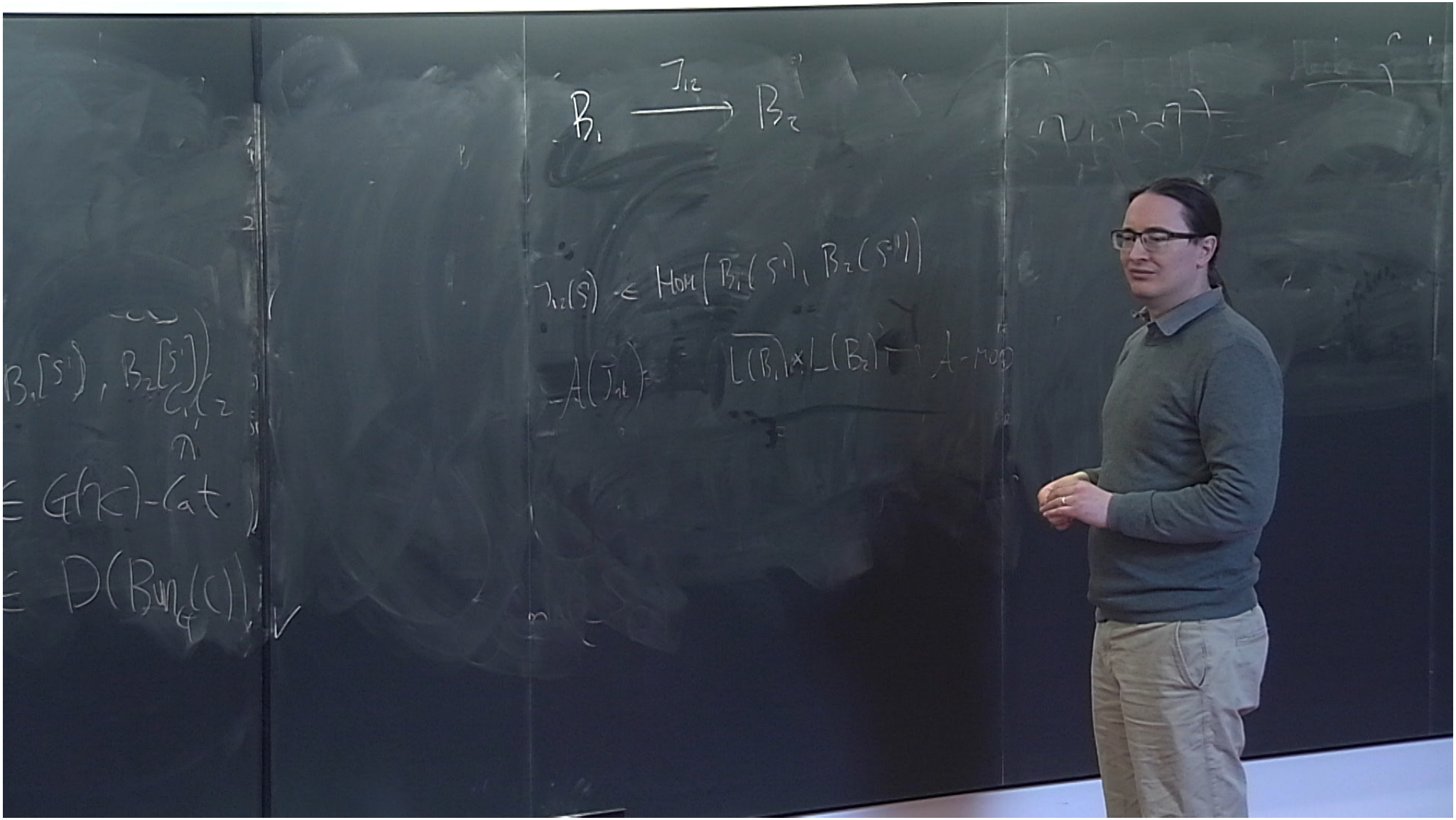

Ex 2
Ex 3
Polar

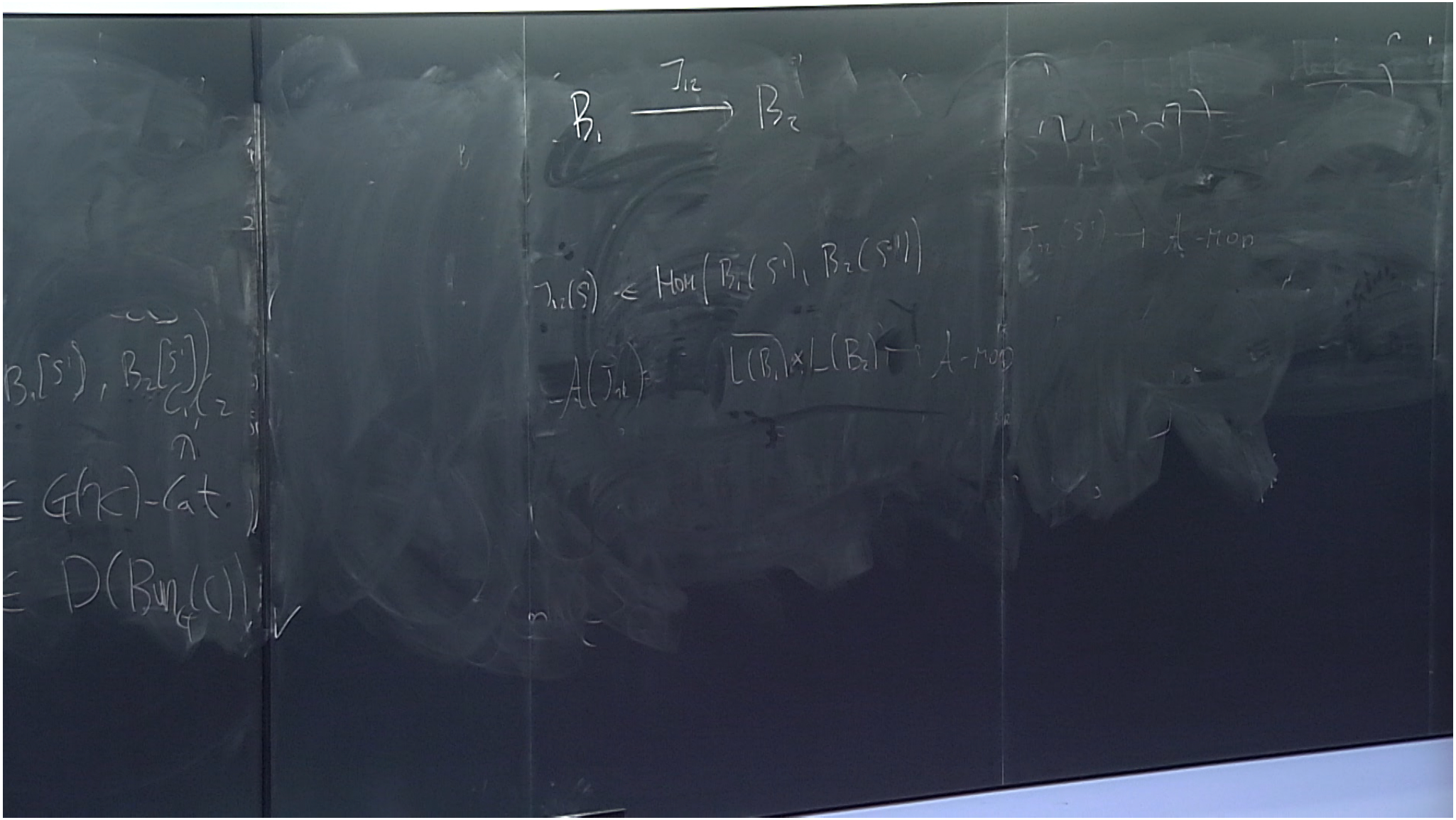

Whit(Gr_G)
Perv
Perv(Bun_G)
Whit(G((t)))
NAHM[S^1]
(G((t)))^{G[[t]]} = Whit(Gr_G)
(B_1, B_2, J_12) → A
L(B_1) ⋆ L(B_2) → A-MOD
A → A-MOD
∈ HOM(B_1[S^1], B_2[S^1])
∈ G(K)-Gat
∈ D(Bun_G(C))
Hom(B[S^1], Id) = L(B
Hom(ĝ-mod, D(Gr_G))

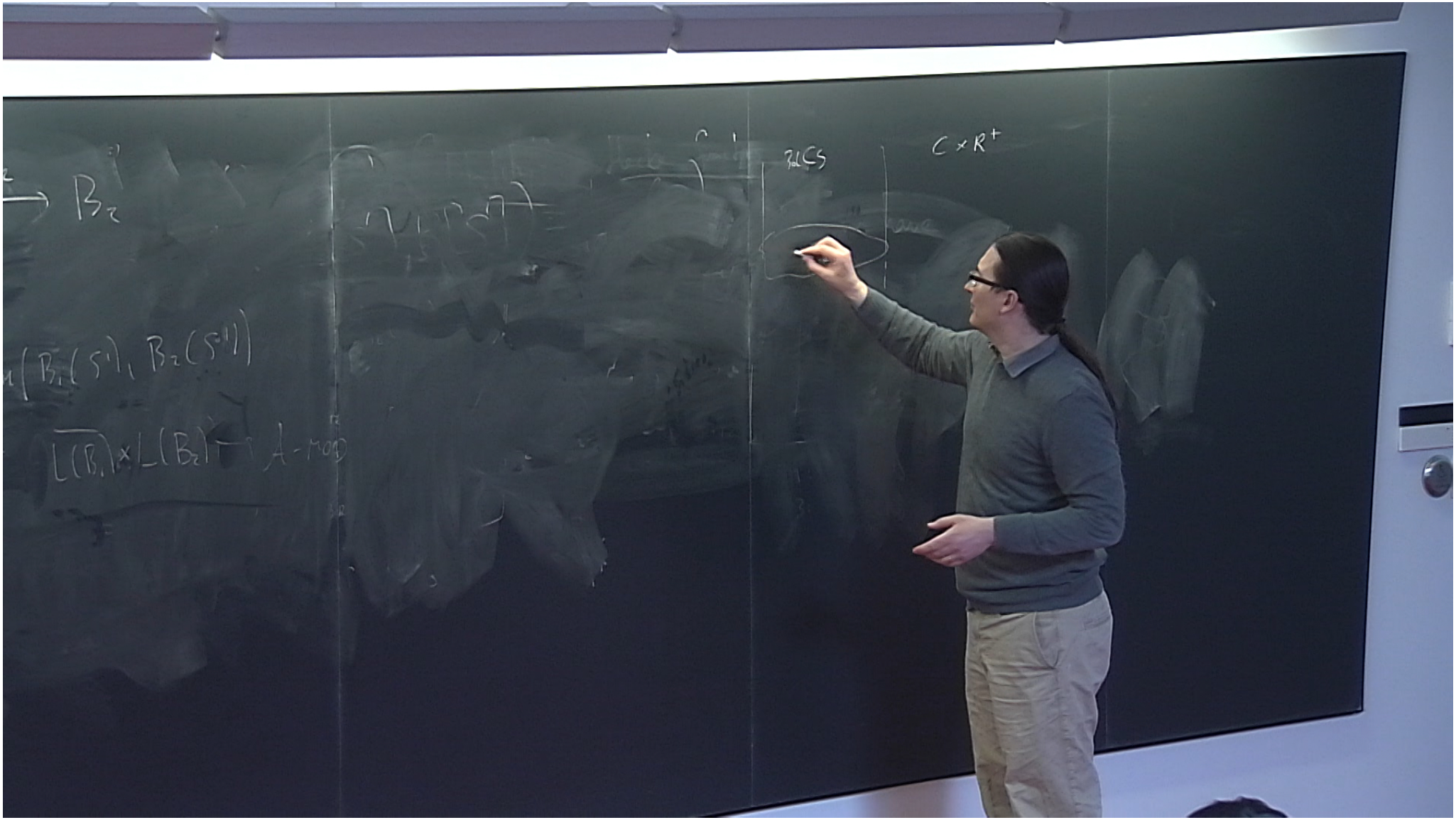

$B_1 \xrightarrow{I_{12}} B_2$
$\in G(K)\text{-}(at.)$
$\in D(Bun_G(C))$

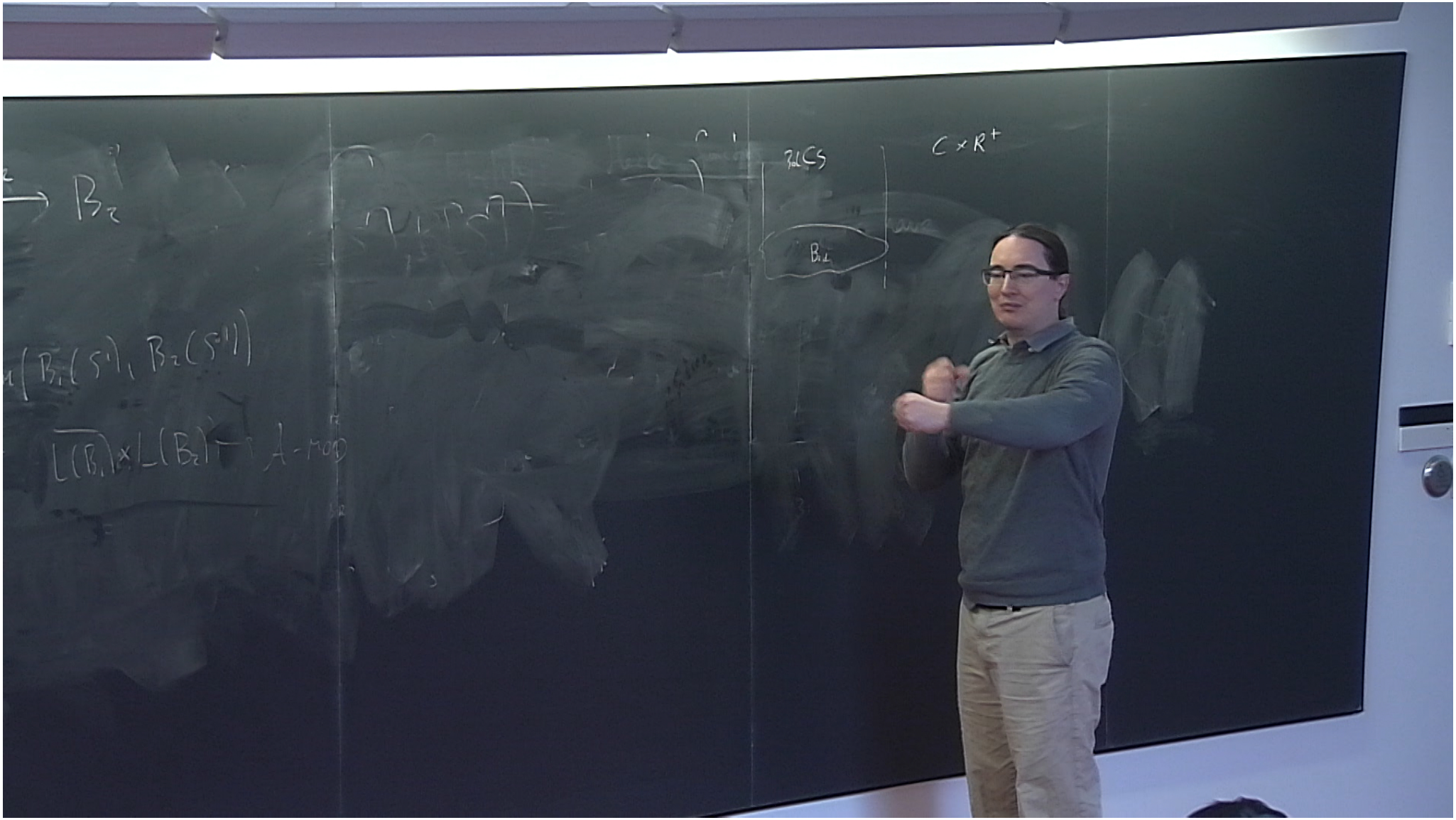

$B_1 \xrightarrow{J_{12}} B_2$
$J_{12}(S) \in \mathrm{Hom}(B_1(S^1), B_2(S^1))$
$L(J_{12}) \in \mathrm{Fun}(L(B_1), L(B_2))$
$\in G(K)\text{-Cat}$
$\in D(\mathrm{Bun}_G(C))$

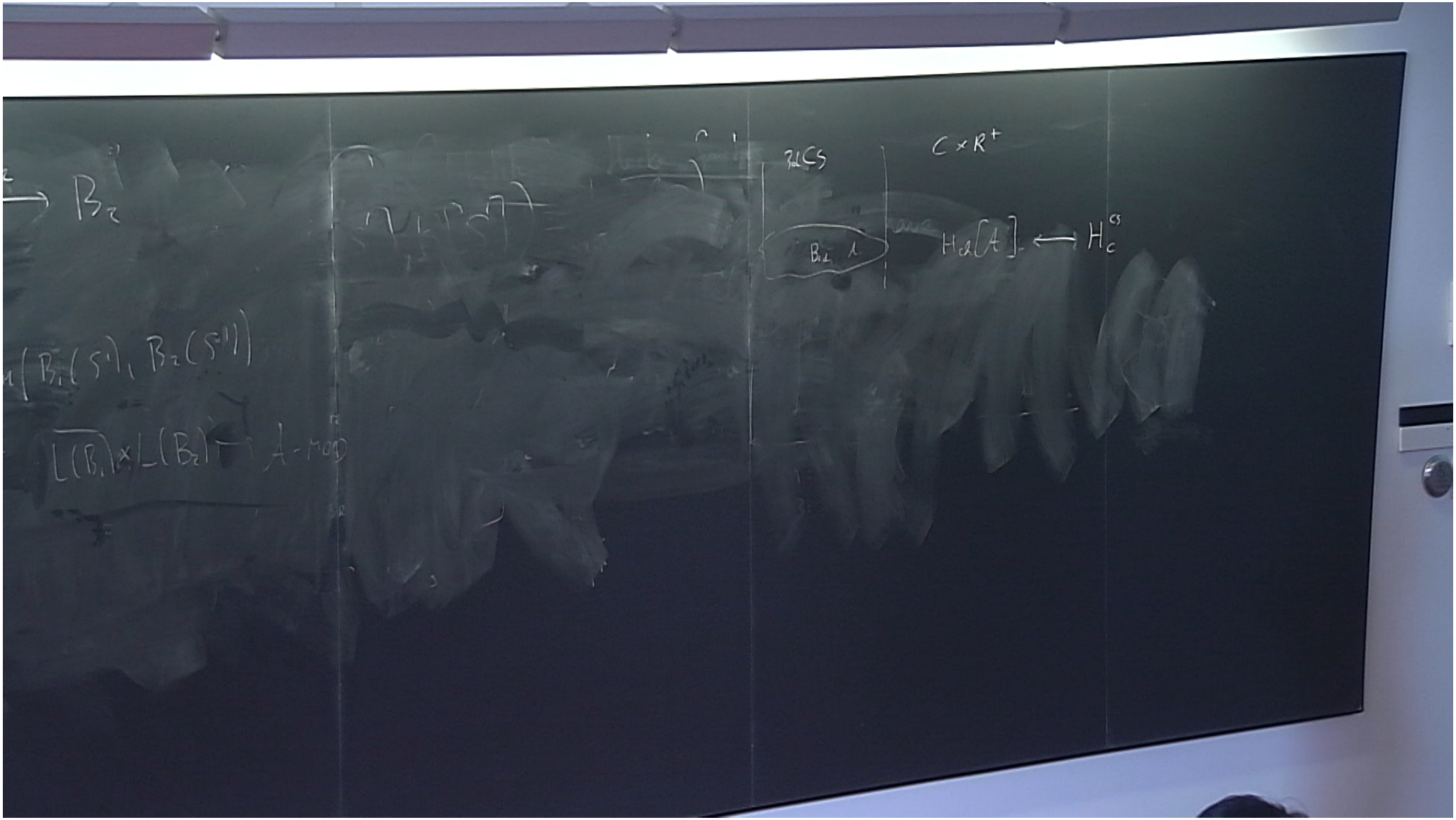

$B_1 \xrightarrow{I_{12}} B_2$
$\mathcal{I}_{12}(S) \in \mathrm{Hom}(B_1(S^1), B_2(S^{1\amalg}))$
A-mod
$\in G(\mathcal{K})$-Cat
$\in D(\mathrm{Bun}_G(C))$

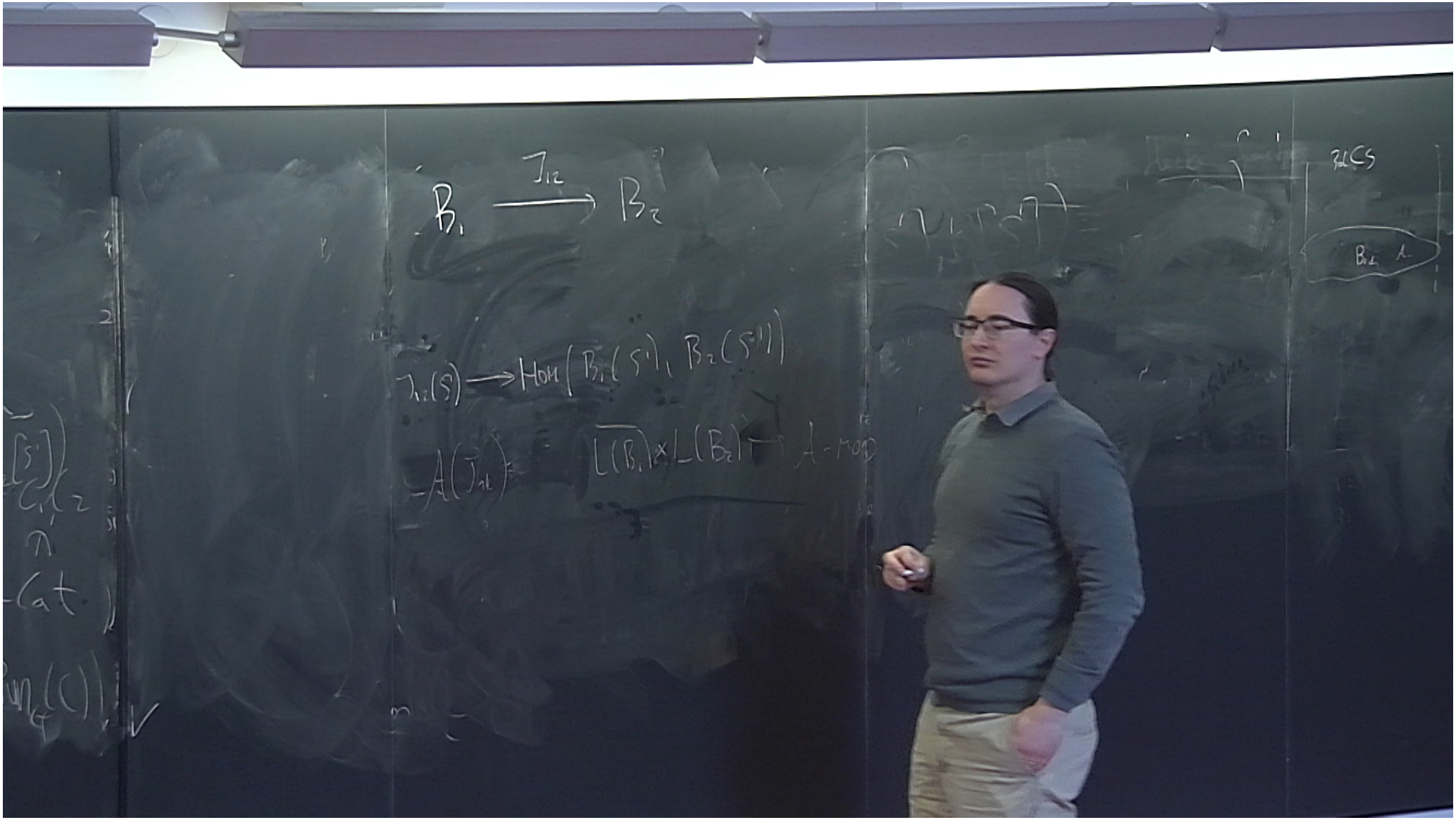

$B_1 \xrightarrow{J_{12}} B_2$
$\gamma_{12}(S) \in \mathrm{Hom}(B_1(S^1), B_2(S^{-1}))$
$A(J_{12})$
$L(B_1) \otimes L(B_2)$
A-mod
$B_1[S^1), B_2[S^1)$
$\in G(K)$-Cat
$\in D(\mathrm{Bun}_G(C))$

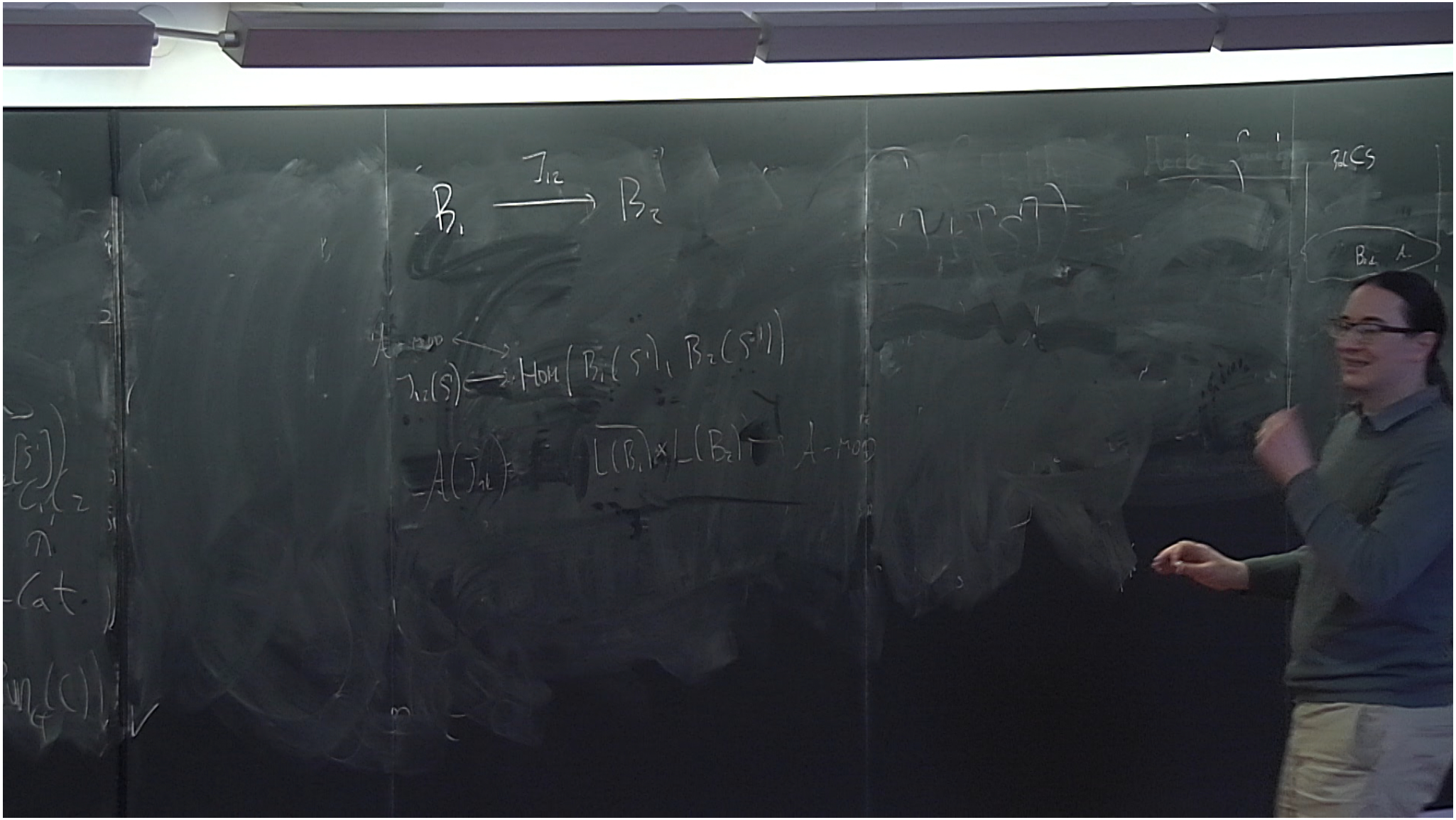

$B_1 \xrightarrow{J_{12}} B_2$
$J_{12}(S') \in \mathrm{Hom}(B_1(S'), B_2(S'))$
$A(J_{12})$
$L(B_1) \star L(B_2)$
A-mod
$\in G(K)$-Cat
$\in D(\mathrm{Bun}_G(C))$

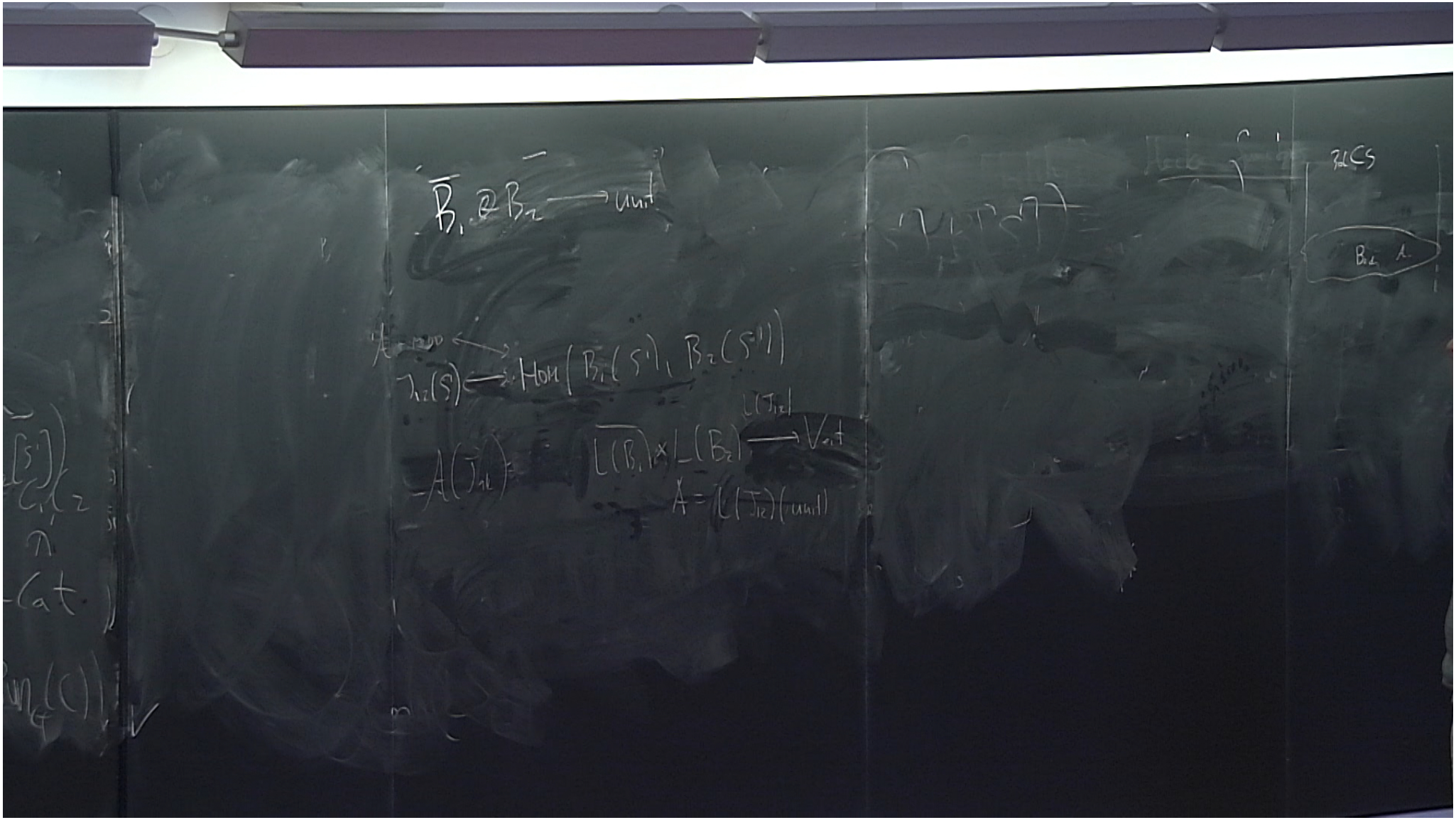

B_2
$C \times R^+$

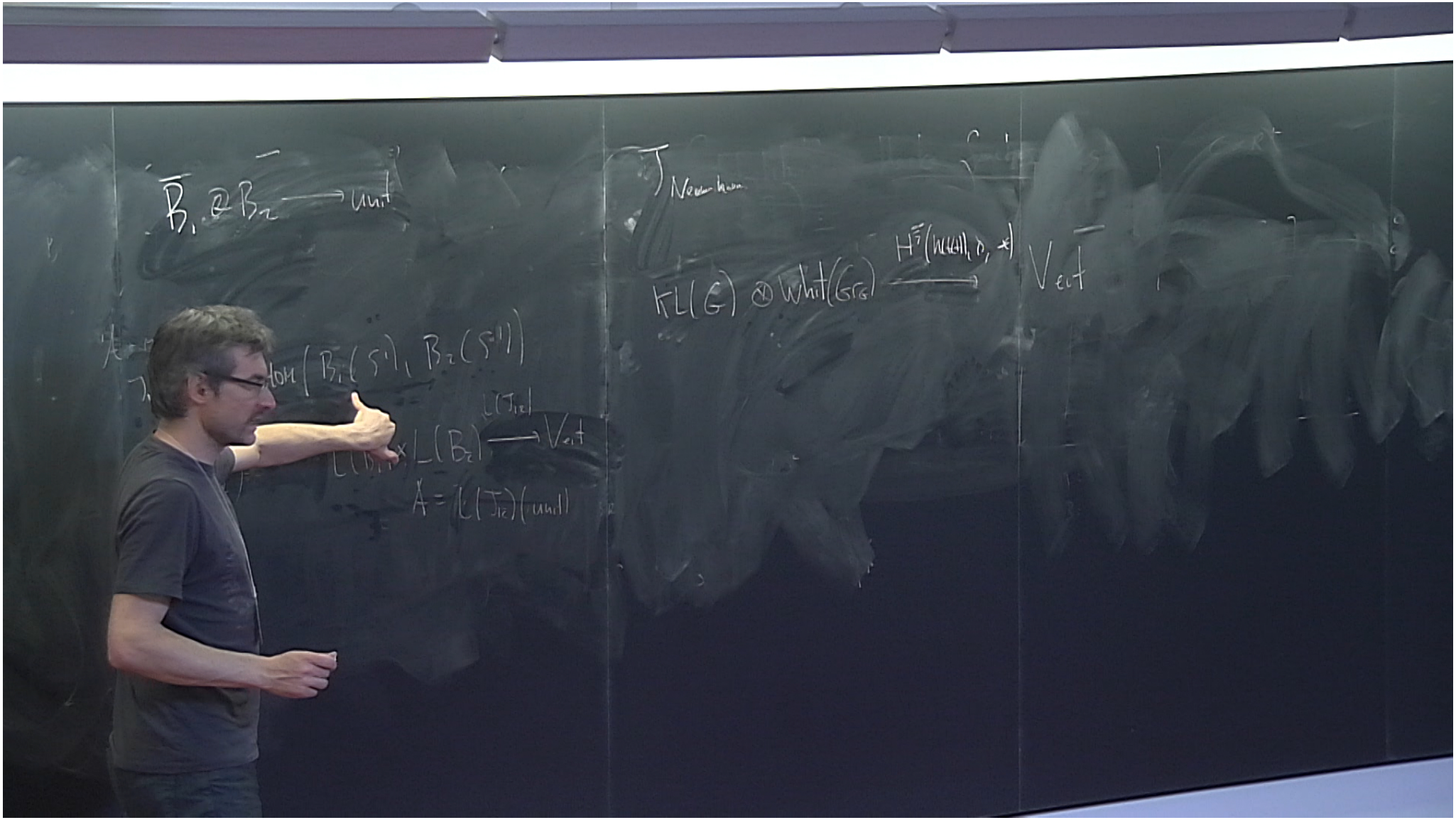

B_2
$C \times R^+$
$B_{1\perp}$

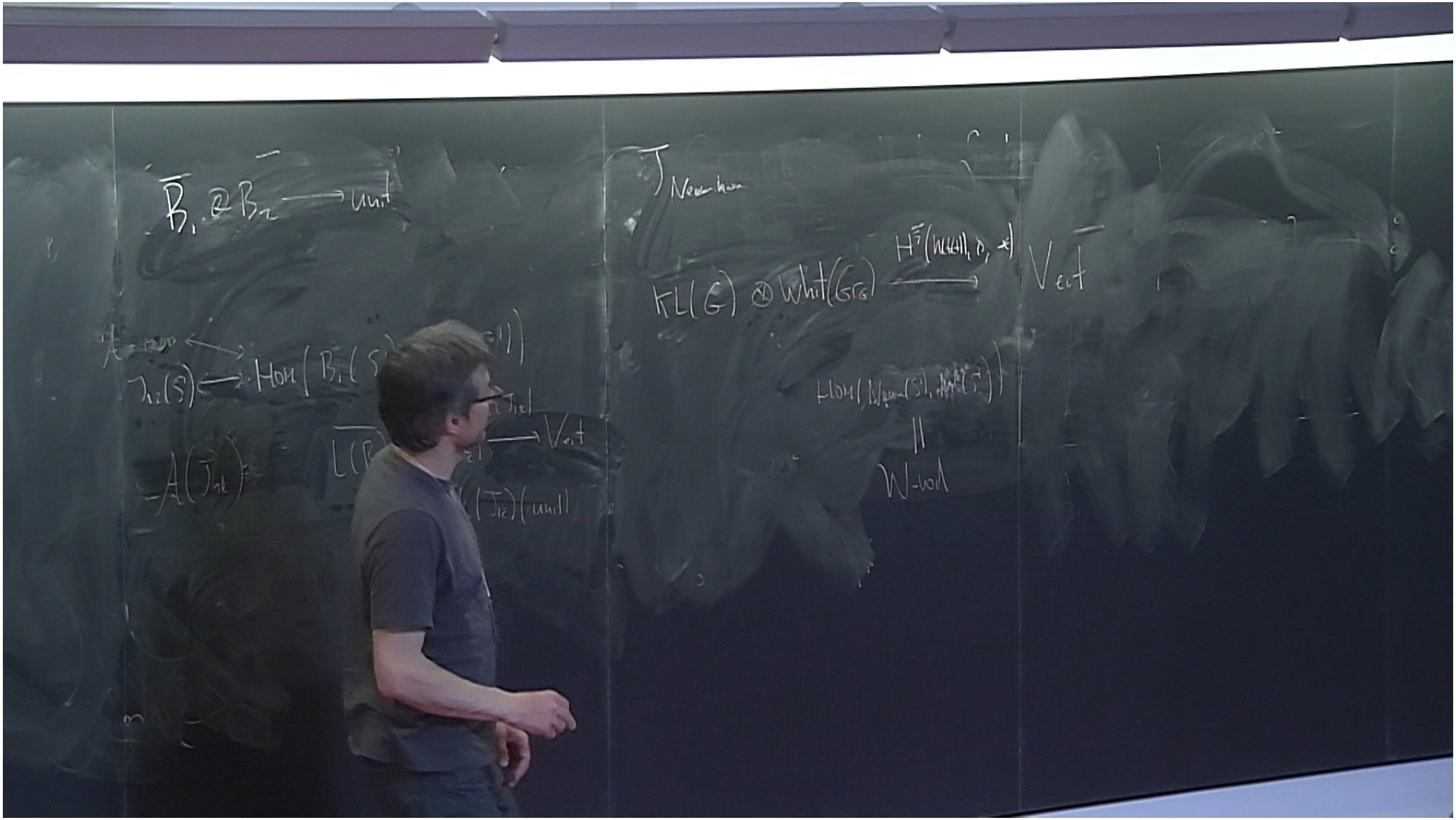

C × R+
H_c^cs

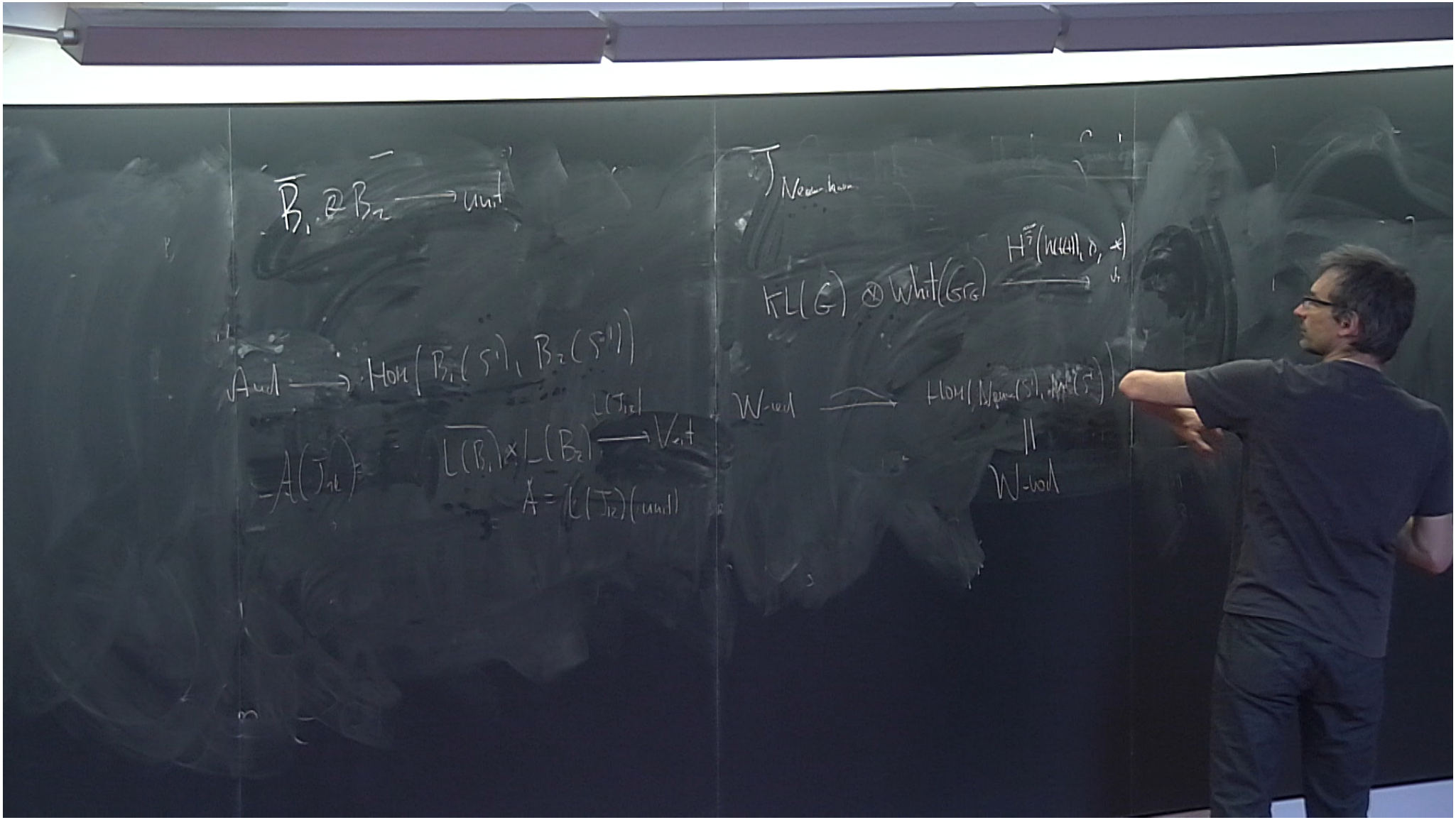

$B_1 \xrightarrow{J_{12}} B_2$
$\mathcal{J}_{12}(S) \longrightarrow \mathrm{Hom}(B_1(S'), B_2(S''))$
$A(J_{12})$
$\overline{L(B_1)} \otimes L(B_2)$
A-mod
$B_2 CS$
B_2

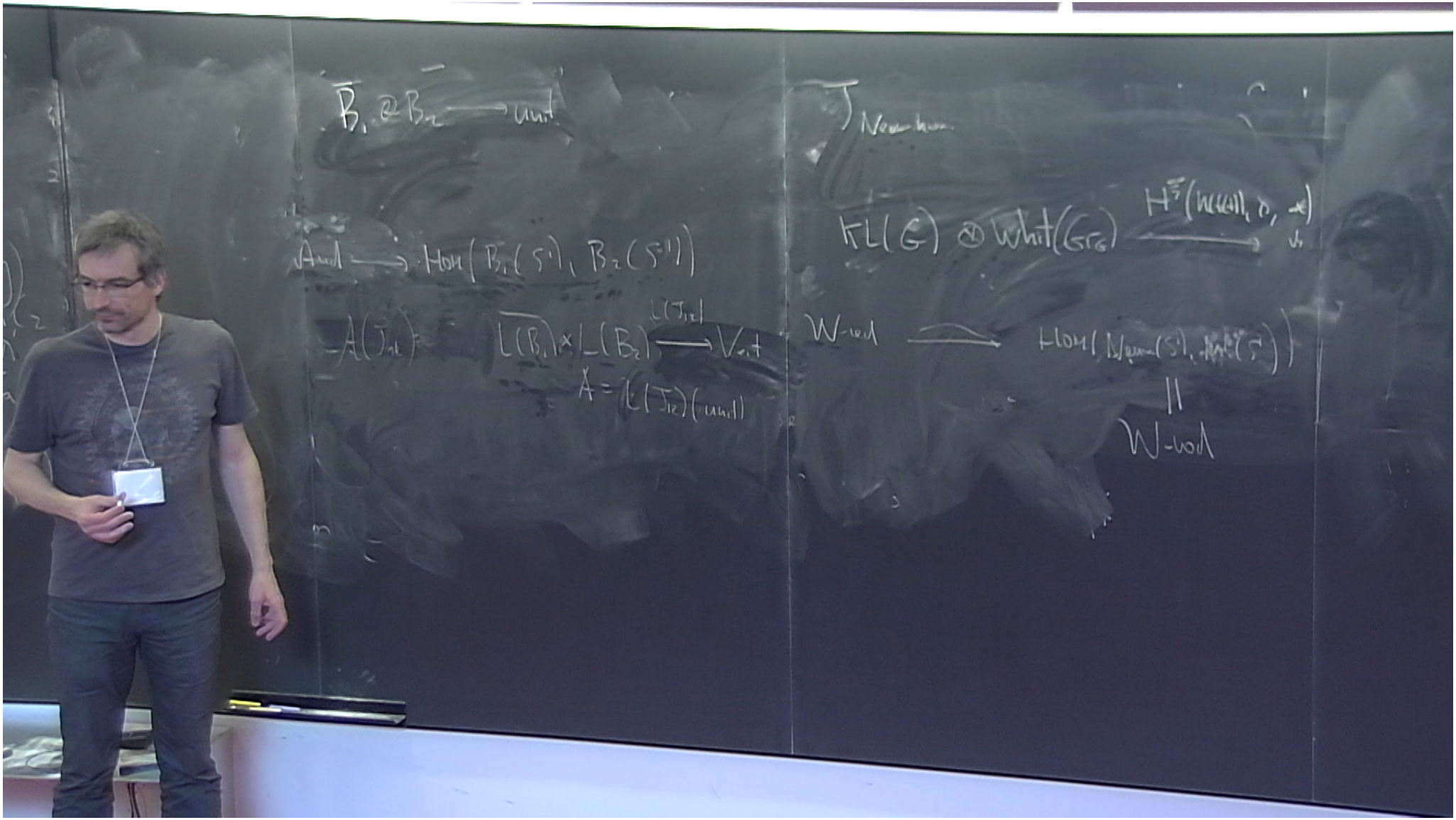

$B_1 \xrightarrow{J_{12}} B_2$
$\mathrm{Hom}(B_1(S'), B_2(S''))$
$L(B_1) \otimes L(B_2)$
A-mod

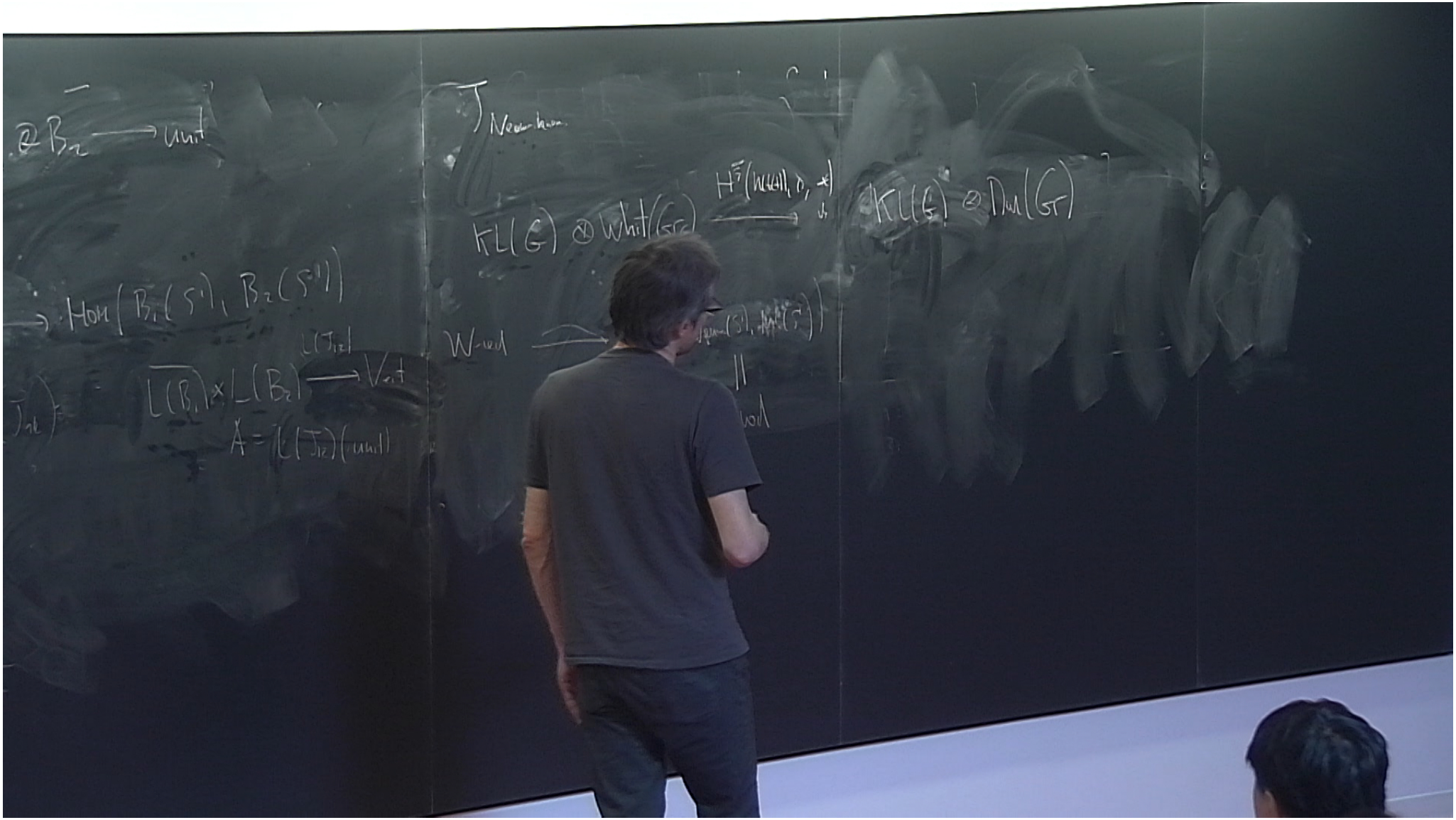

$\overline{B_1} \otimes B_2 \longrightarrow \mathrm{Vect}$
$\mathrm{Hom}(B_1(S'), B_2(S''))$
$L(B_1) \otimes L(B_2) \longrightarrow \mathrm{Vect}$
$L(T_{12})$
$A = L(T_{12})(\mathrm{unit})$
$B_2 CS$

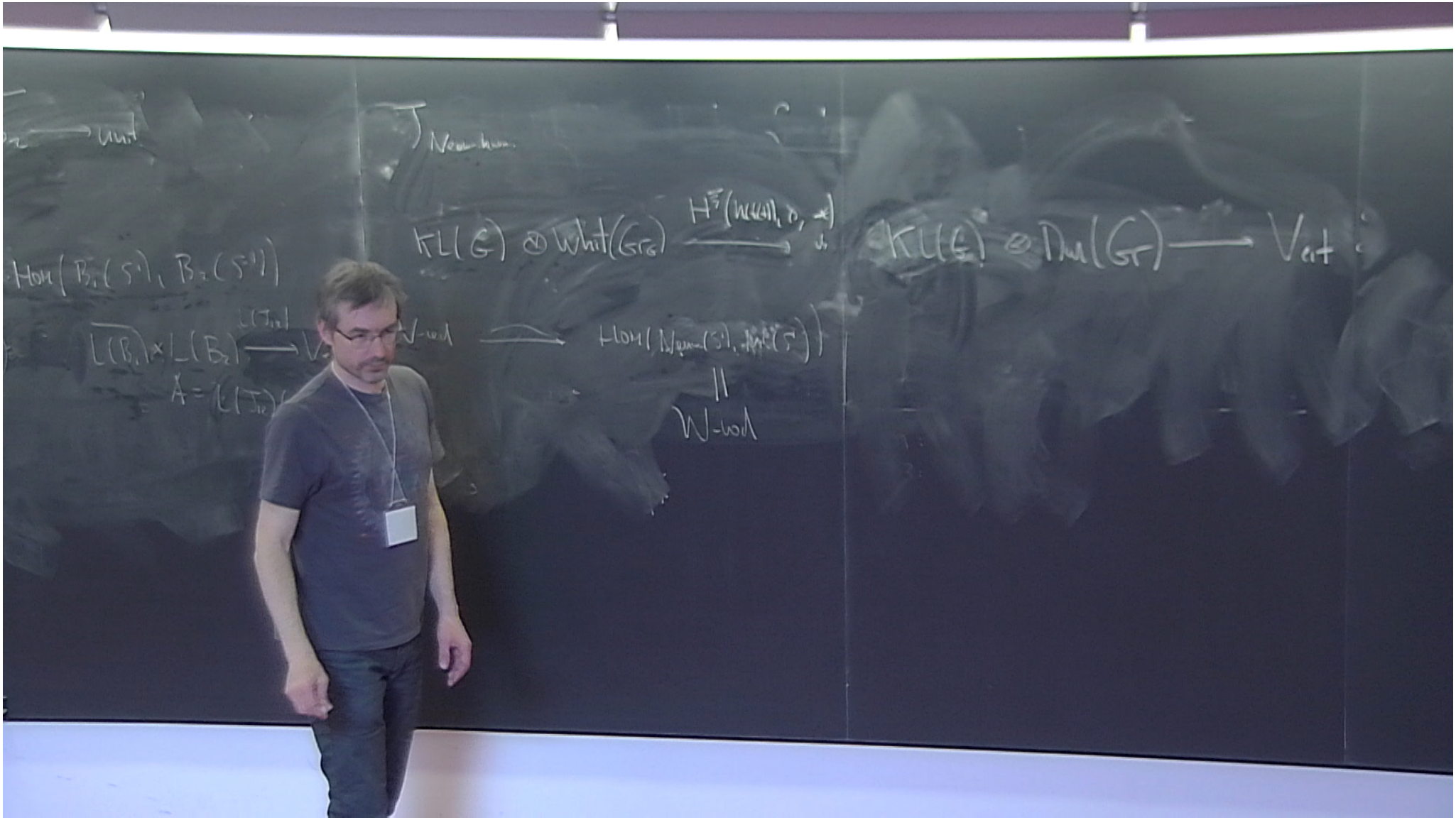

$\overline{B}_1 \otimes B_2 \longrightarrow \mathrm{Unit}$
$\mathrm{Hom}(B_1(S^1), B_2(S^1))$
$L(B_1) \times L(B_2) \longrightarrow \mathrm{Vect}$
$L(T_{12})$
$A = L(T_{12})(\mathrm{unit})$
T_{Neumann}
$FL(G) \otimes \mathrm{Whit}(G_{FG}) \longrightarrow \mathrm{Vect}$
$H^{\bullet}(\mathrm{wall}, \partial, *)$

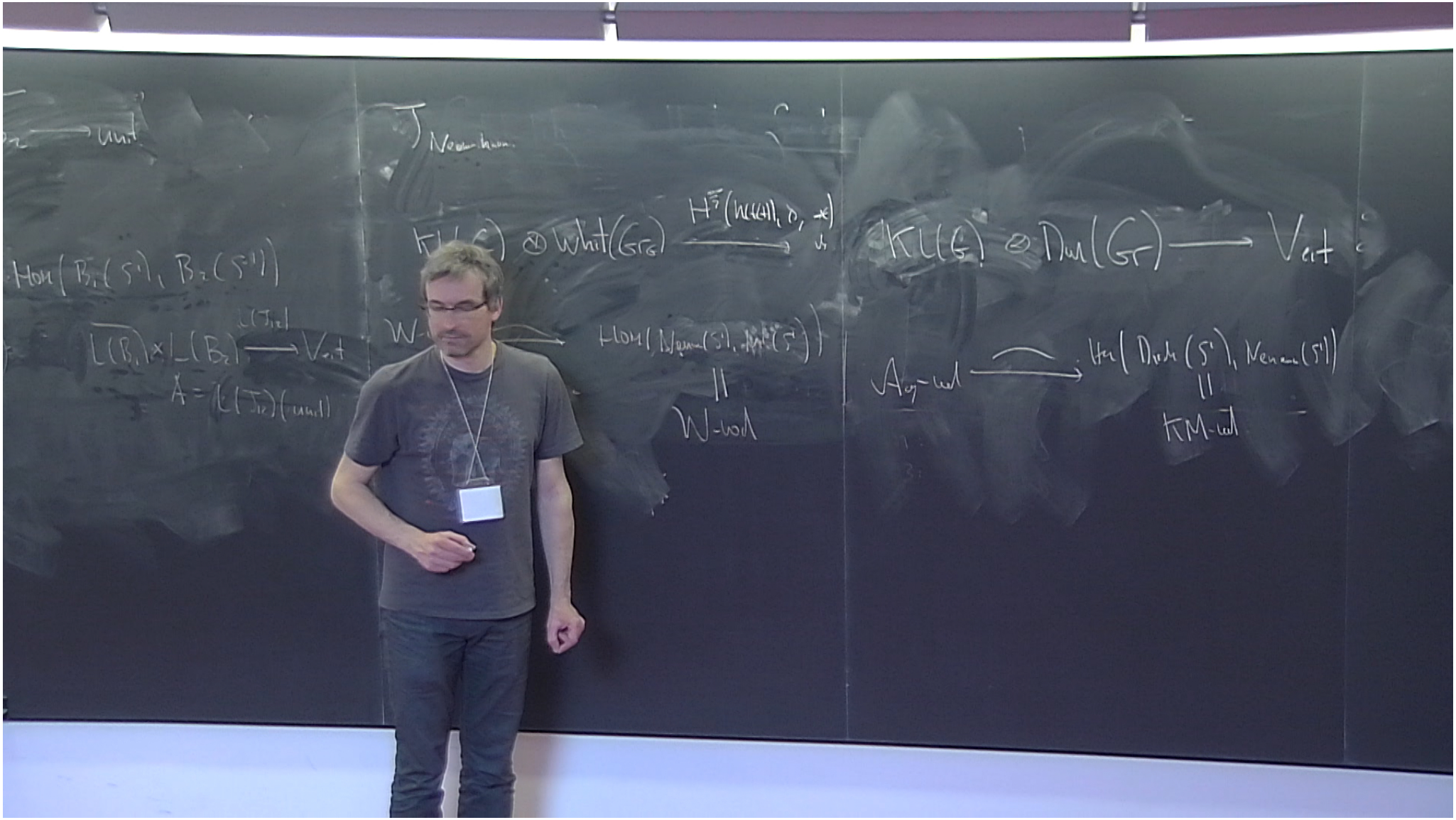

$\overline{B}_1 \otimes B_2 \longrightarrow \mathrm{Hom}$
J_{Verdier}
$H^{\bullet}(\mathrm{Hecke}_1, \mathcal{O}, *)$
$KL(G) \otimes \mathrm{Whit}(Gr_G)$
V_{ect}
$\mathrm{Hom}(\mathrm{Verdier}(S), \mathrm{Hecke}(S'))$
$\mathrm{Hom}(\mathrm{Verdier}(S), \mathrm{Hecke}(S'))$
$\parallel$
$W\text{-mod}$

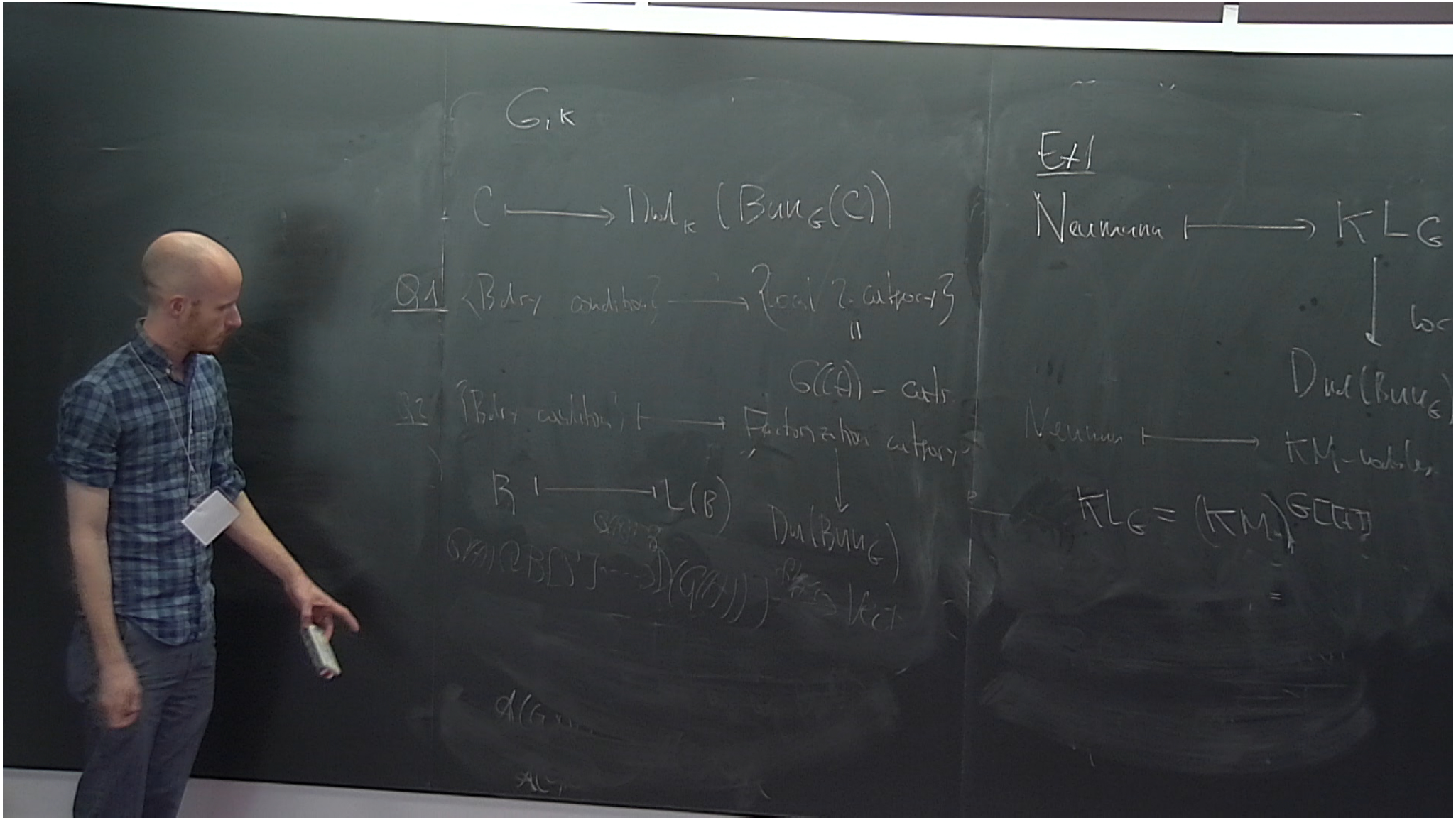


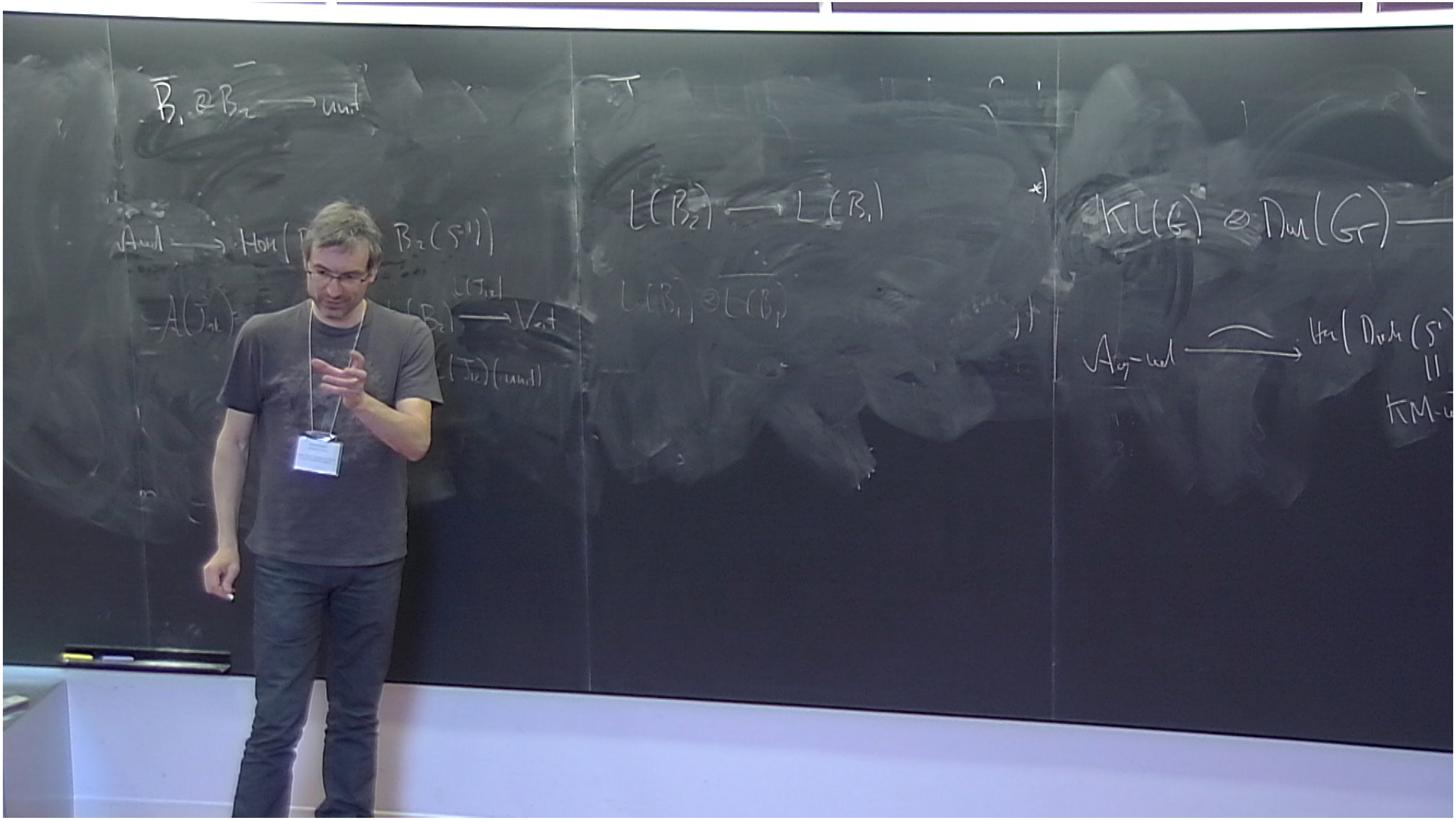


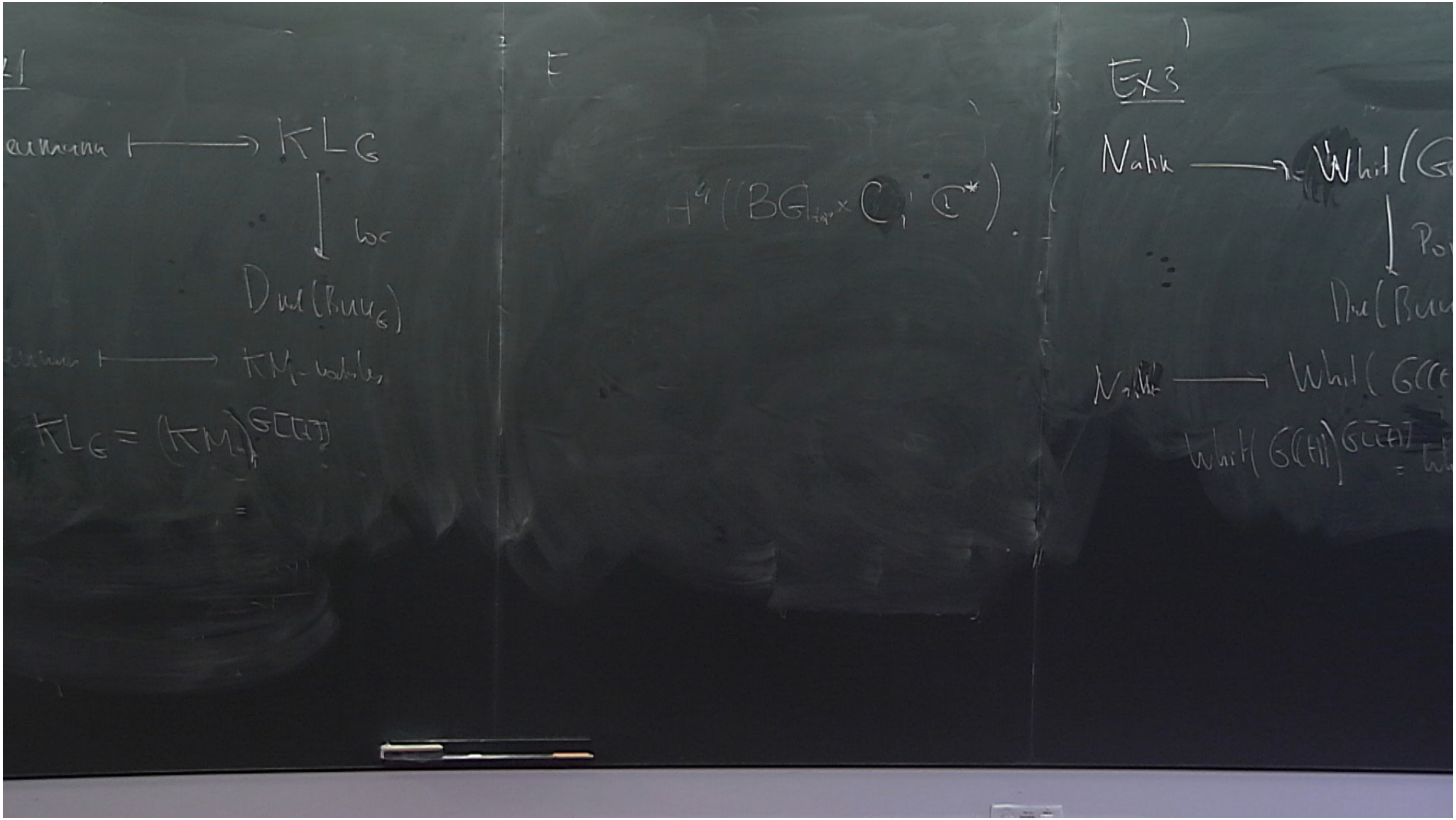


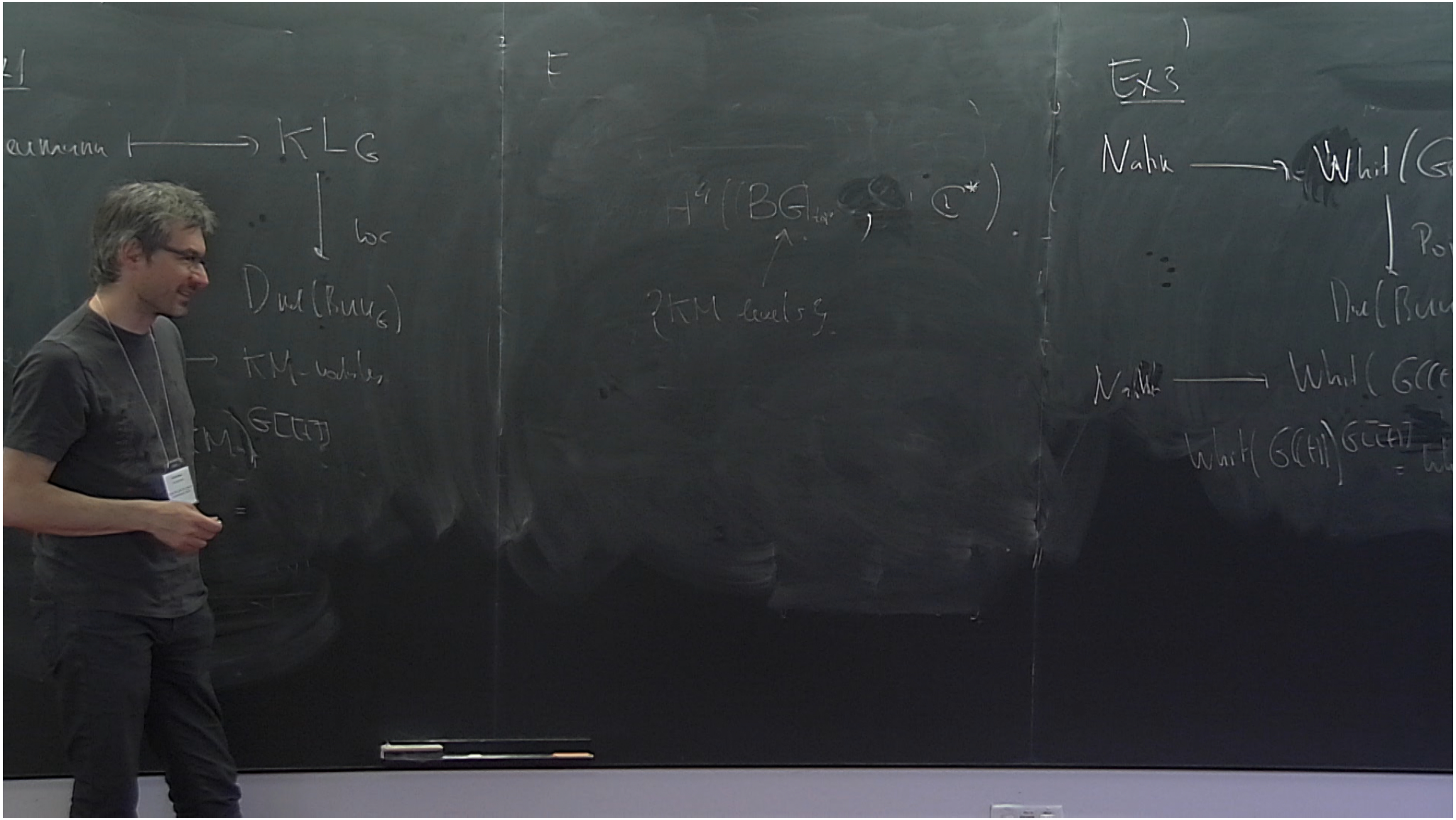

Neur-hom.
KL(G) ⊗ Whit(G_F)
KL(G) ⊗ Dual(G_F) → Vect
W-mod
W-mod

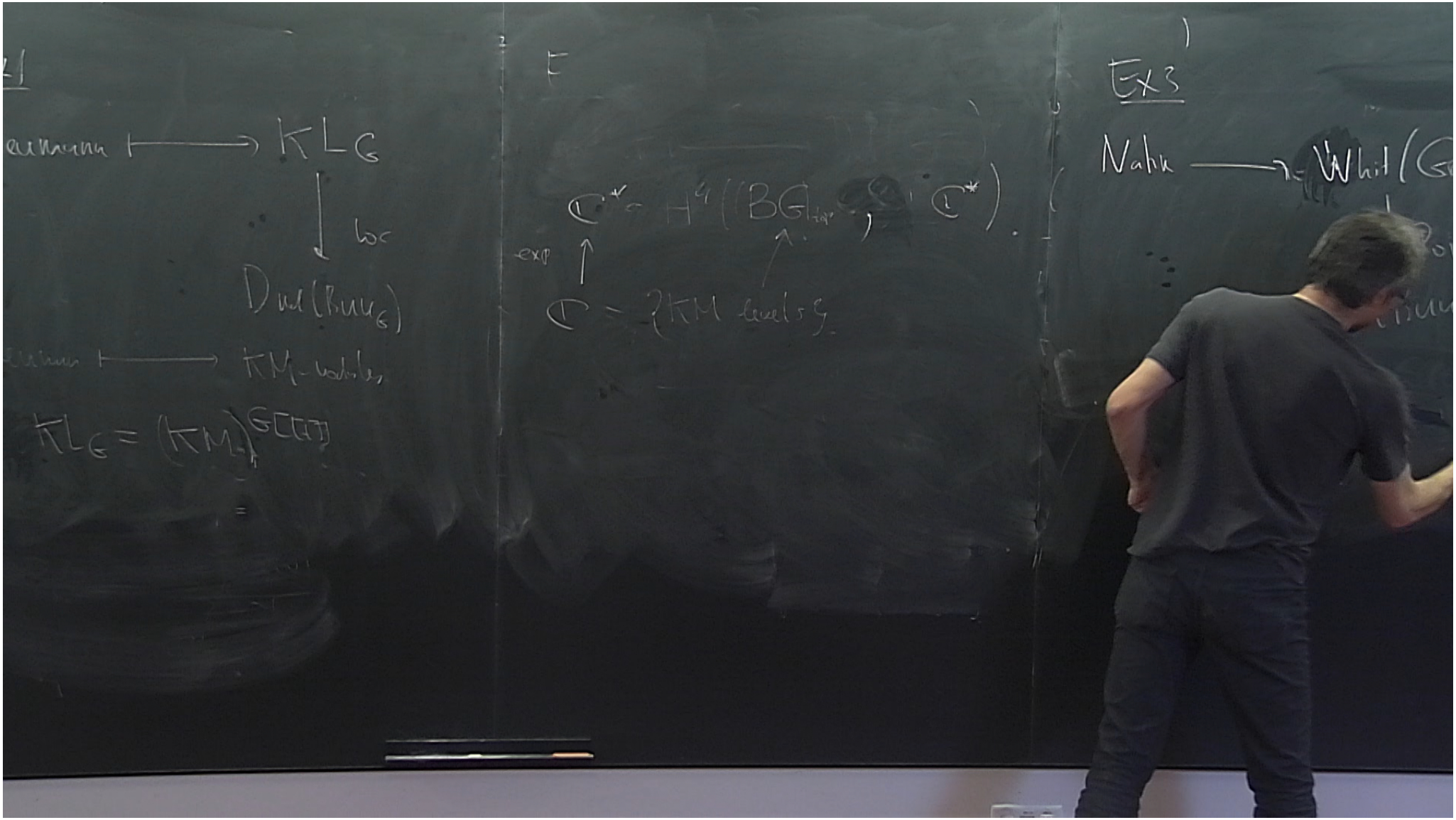


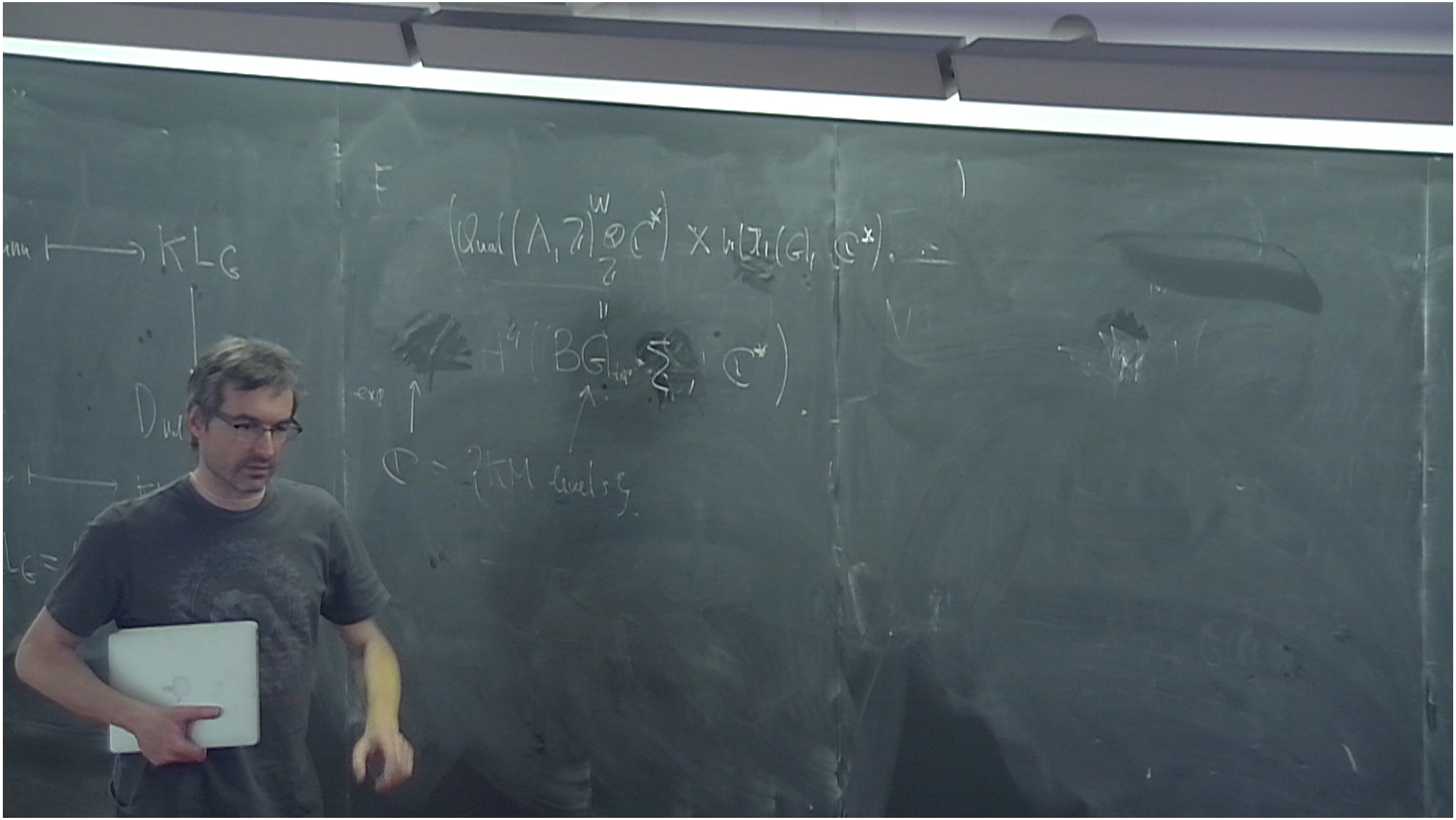

G, k
C ⟶ Dul_k (Bun_G(C))
Q1
Q2
Et1
Neumann ⟶ KL_G
Dul(Bun_G)
KL_G = (KM_·)^{G(C)}

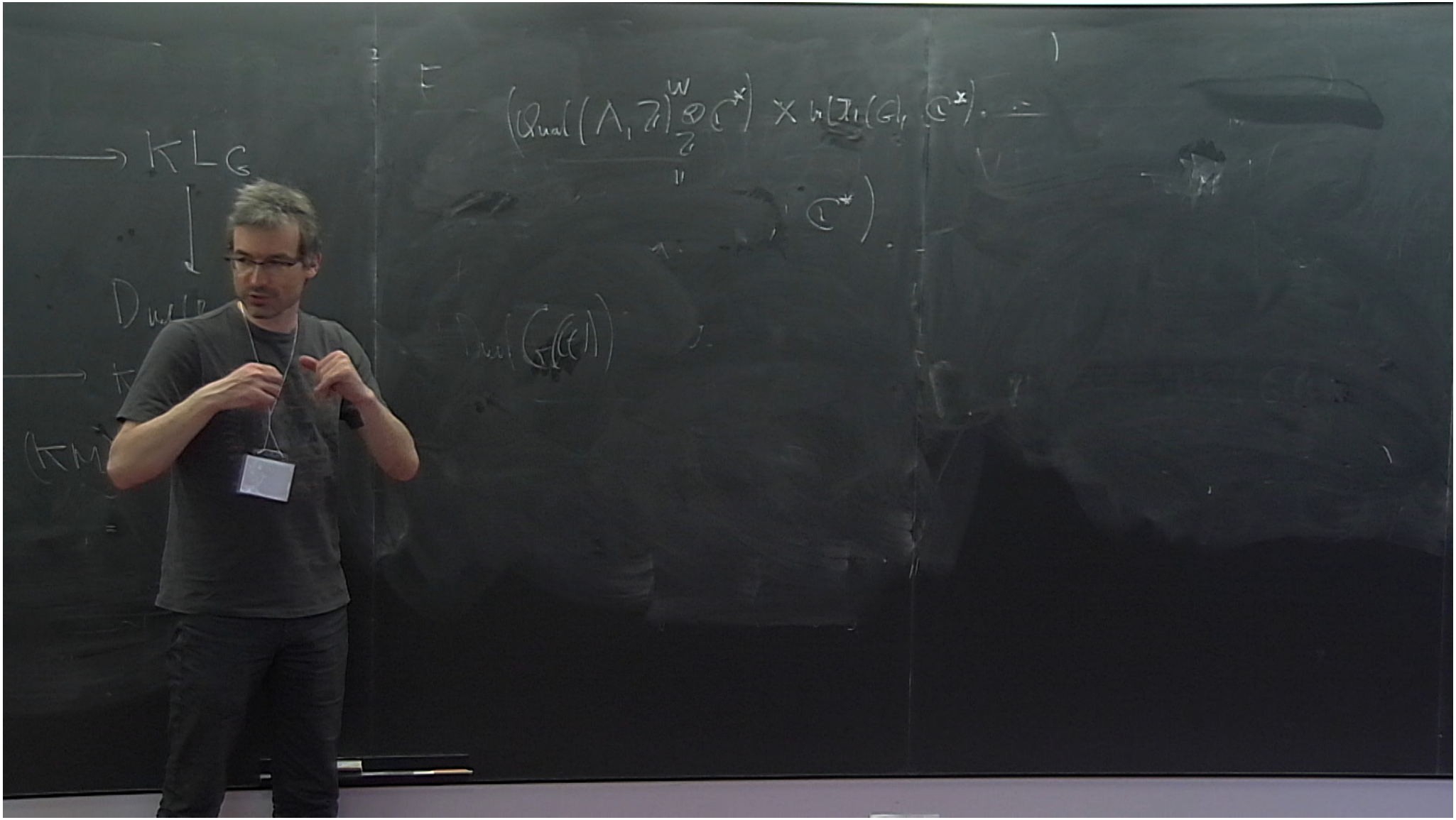


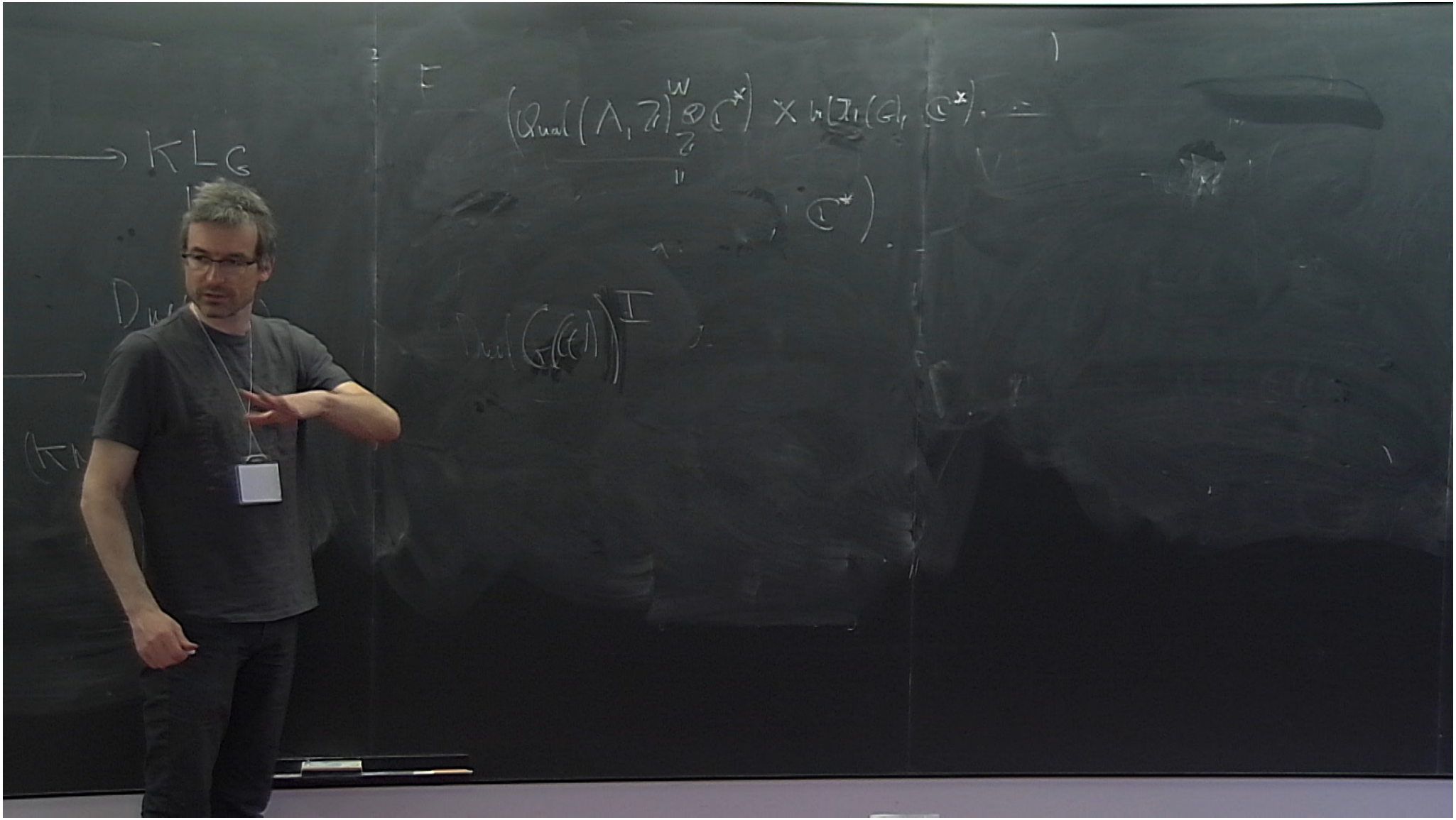

KLG
loc
Dual(
KM
Ex3
Whit(
Whit(

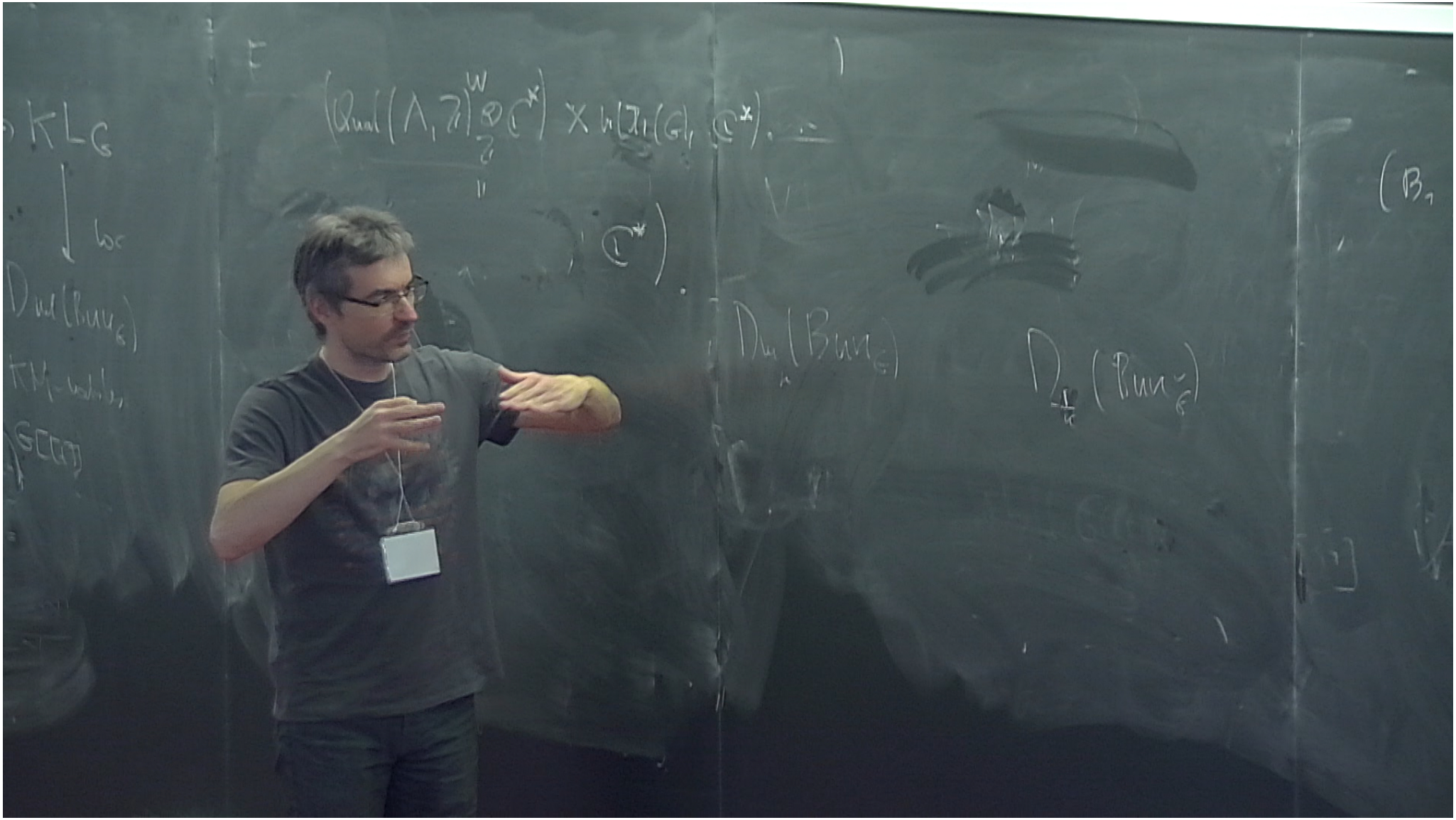

KLG
loc
Ex 3
Nat
Whit(G

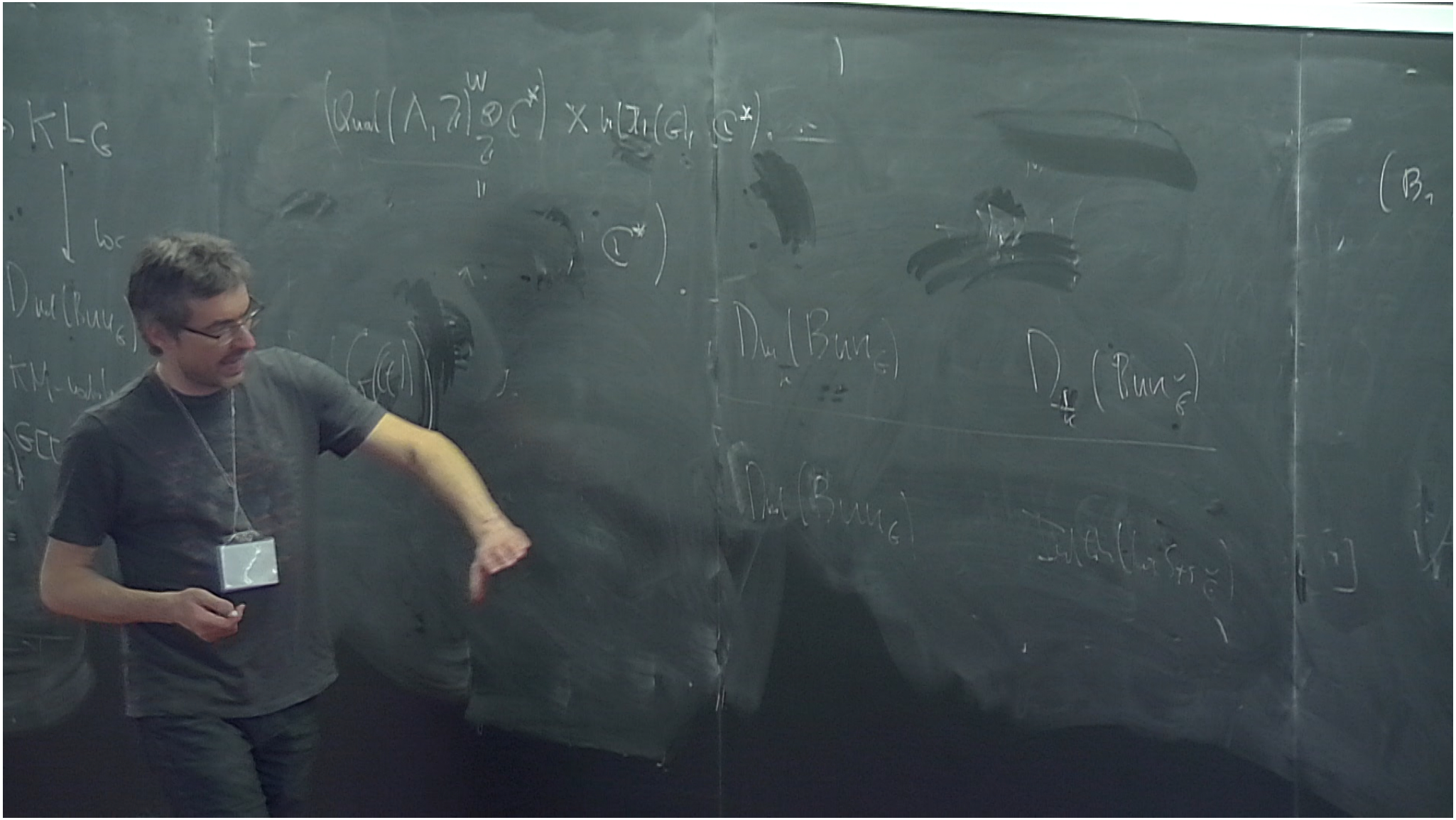

KLG
loc
Ex3
exp


KLG
exp


KLG


KLG




KLG
Dual(Bun_G)
D_1(Bun_G)
D_{-1/k}(Bun_G)
Dual(Bun_G)
(B_1