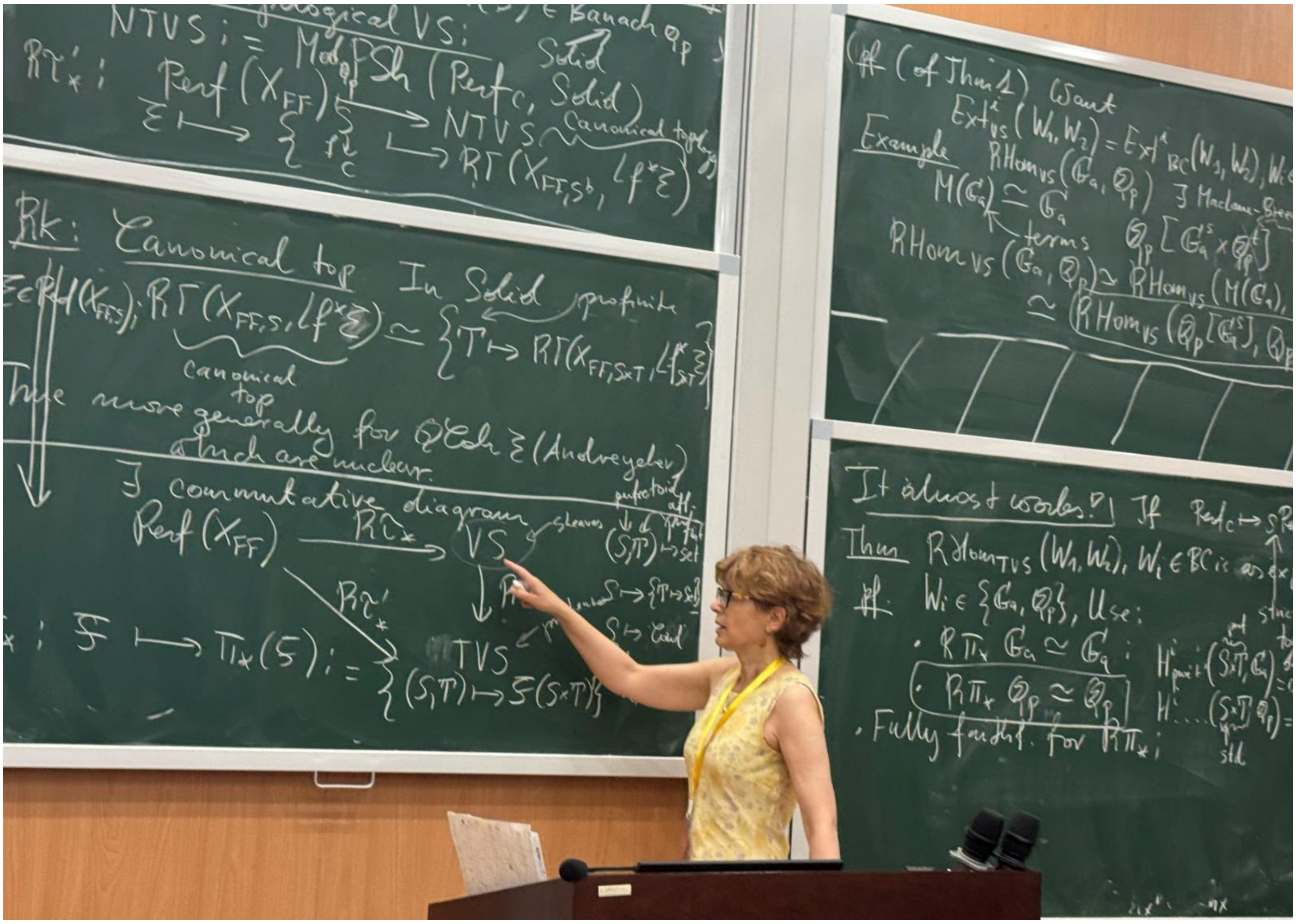
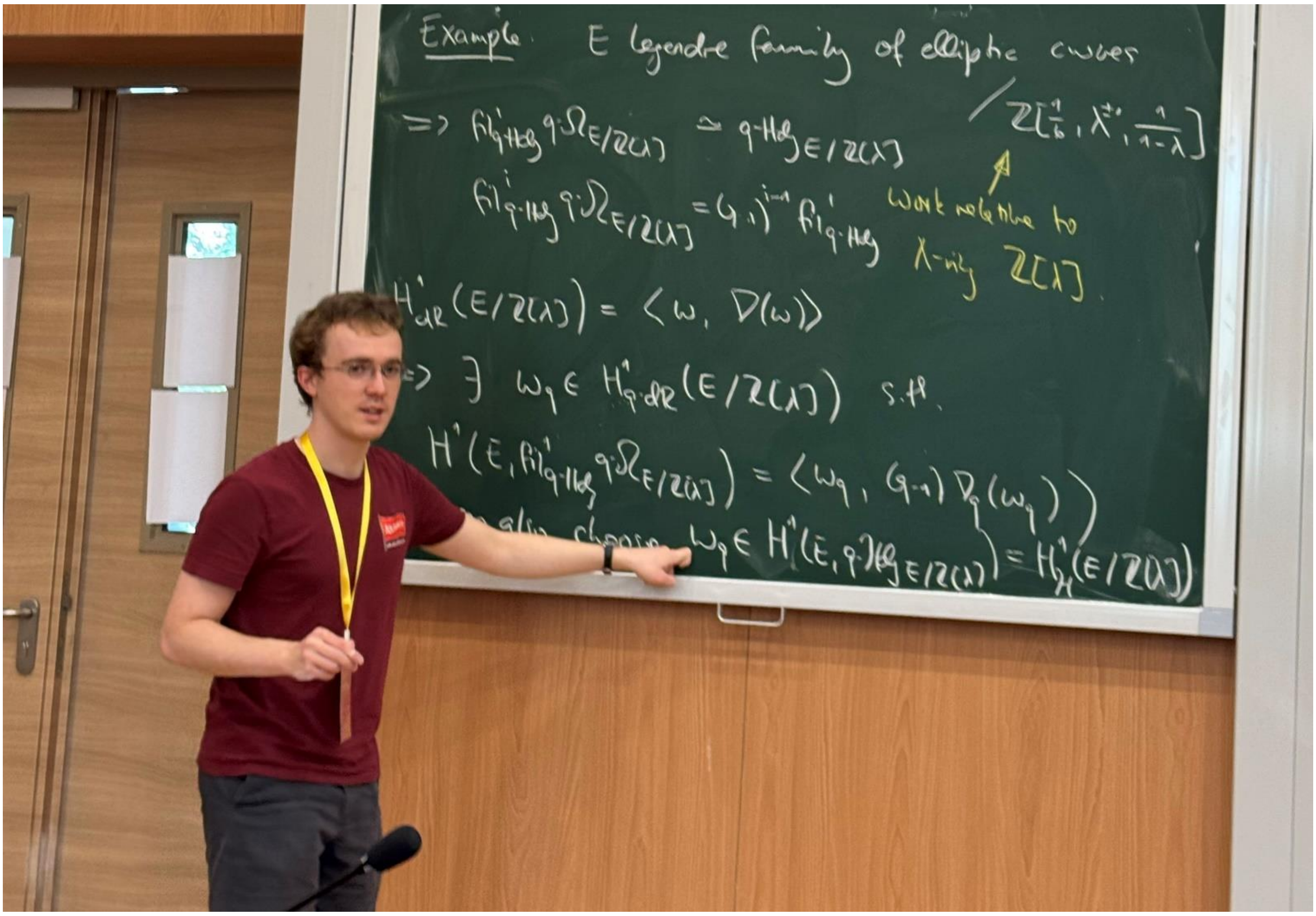
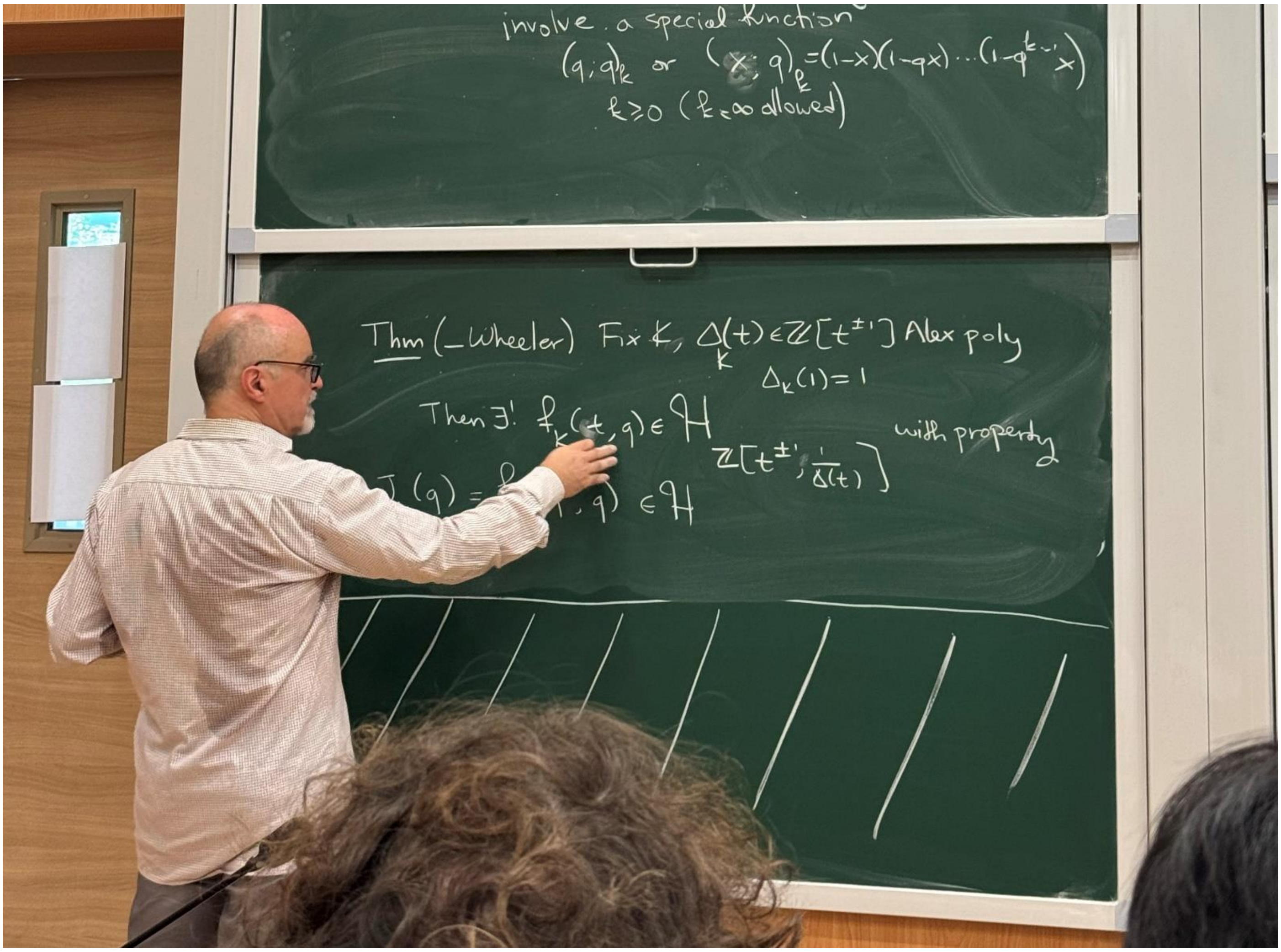
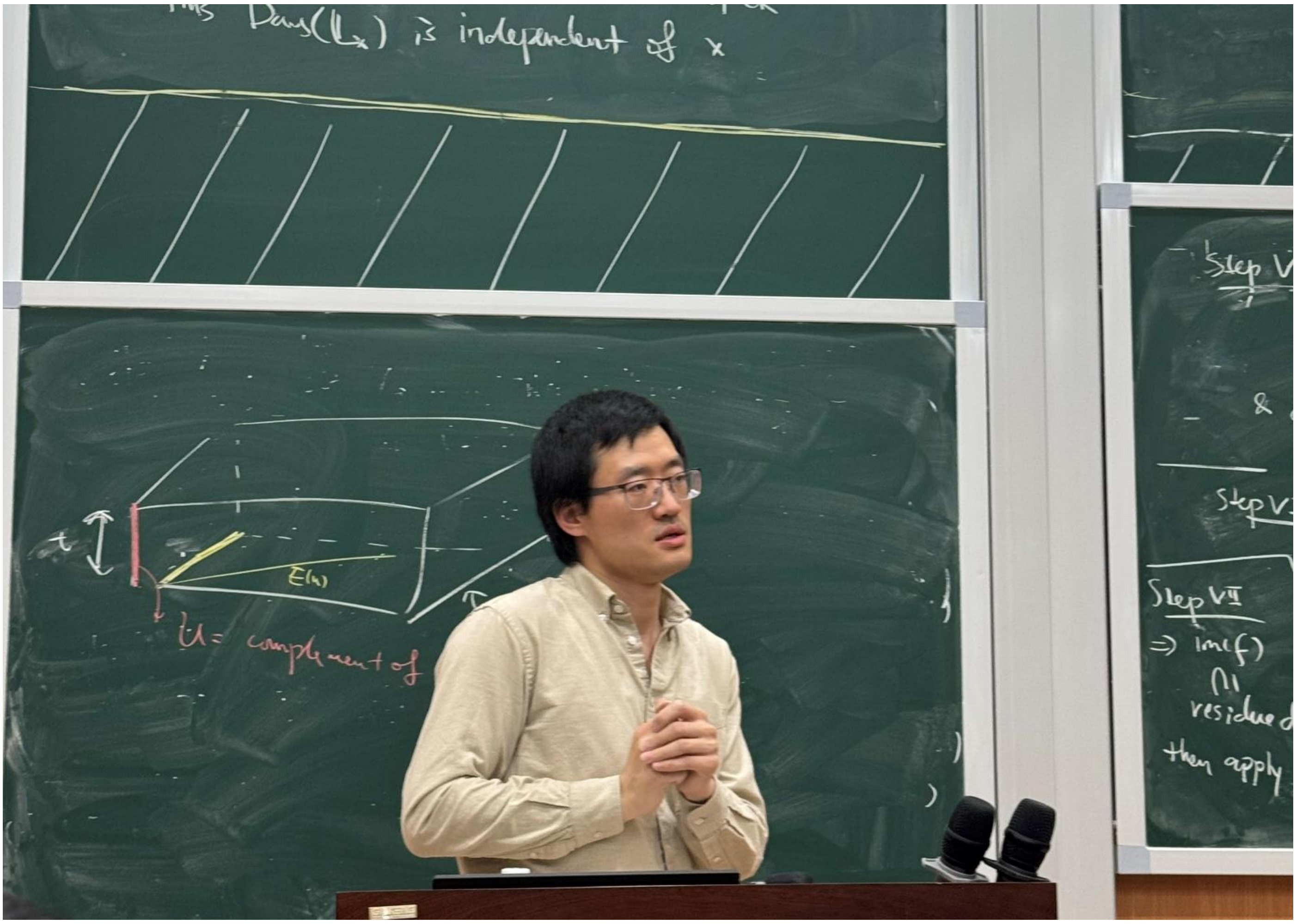



A twistor bundle on the RTFFC / $S^{\diamond,f}$
is a vector bundle $\mathcal{E}$
+ an integrable connection on $\mathcal{E}|_{X\setminus\infty}$
with simple pole at ∞.
Scholze
Descend using connection
Idea for theorem
1) $\mathbb{L}$ a $\mathbb{Q}_p$-local system on S
A connection on $\mathcal{E}_0(\mathbb{L})$
2) Modify at ∞ to define $\mathcal{E}(\mathbb{L})$
$\mathcal{E}(\mathbb{L})$ will equal $\mathcal{E}_0(\mathbb{L})$
= tangent vector at a C_p-point
will be geometric Sen morphism

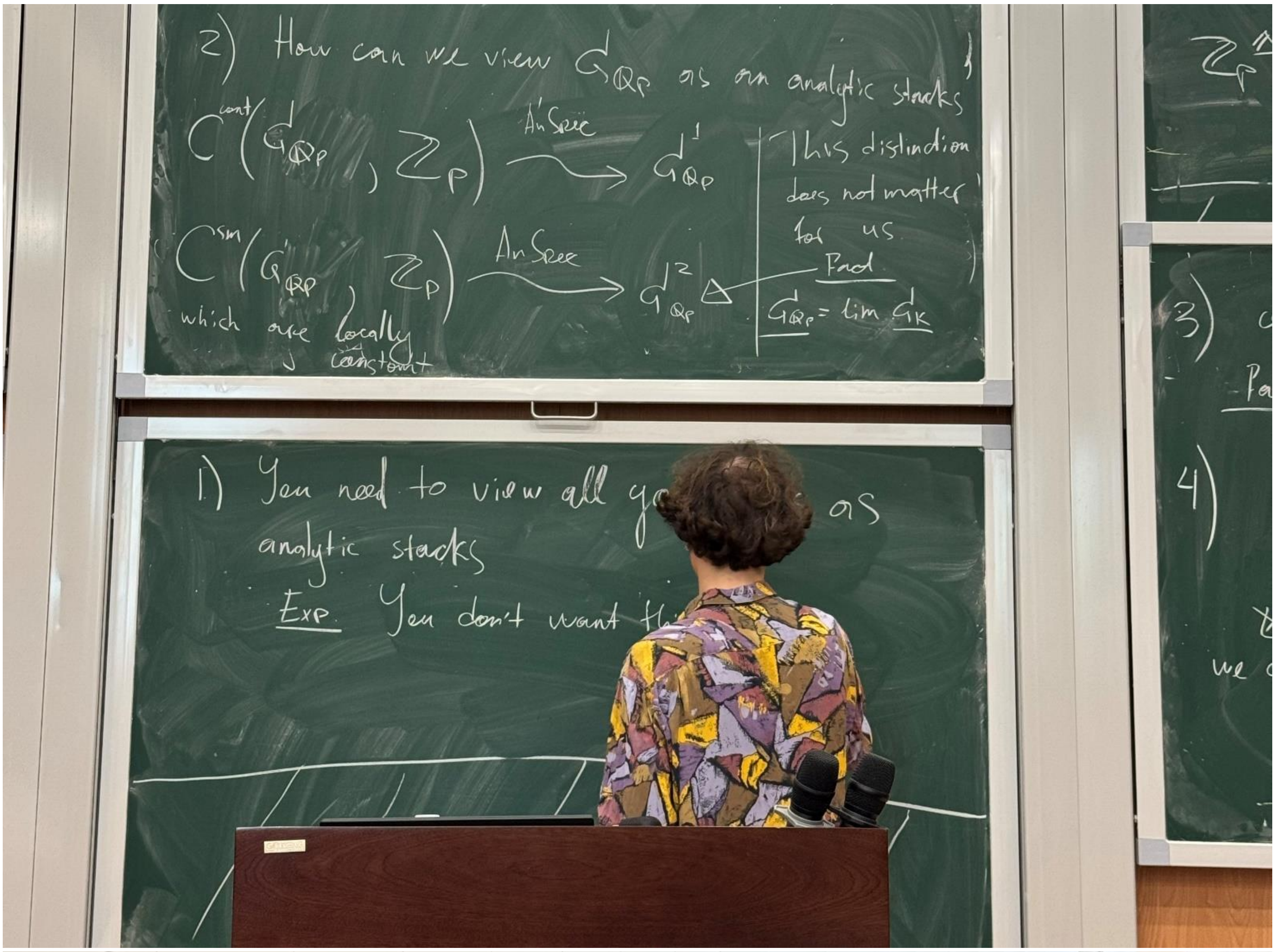
coadmissible $\widehat{\mathcal{D}}$-modules
complexes
Thm (W.) $\mathcal{M}^\cdot \in \mathcal{D}_{\mathcal{C}}(\widehat{\mathcal{D}})$
canonical
$\mathcal{M}^\cdot \xrightarrow{\cong} \mathrm{Rec}(\mathrm{Sol}(\mathcal{M}^\cdot))$
Thm (W.) $\mathrm{Sol}: \mathcal{D}_{\mathcal{C}}(\widehat{\mathcal{D}}) \hookrightarrow \mathcal{D}(\mathbb{B}^+_{pdR})$
fully faithful

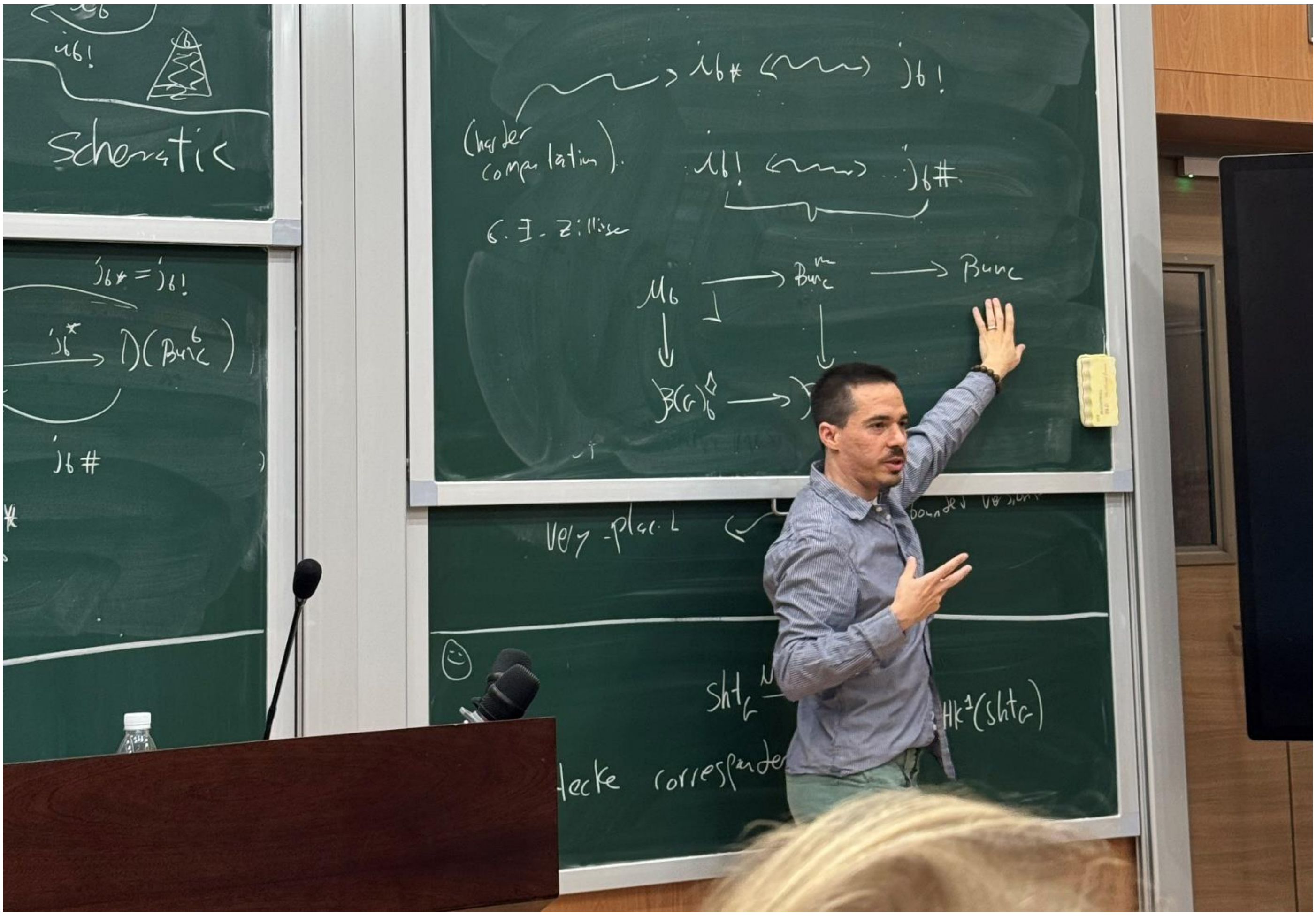

Example E legendre family of elliptic curves
=> fil^i_q-Hdg q-Ω_E/Z[λ] ≃ q-Hdg_E/Z[λ]
/ Z[1/6, λ^±1, 1/(1-λ)]
fil^i_q-Hdg q-Ω_E/Z[λ] = (q-1)^(i-1) fil^1_q-Hdg
work relative to λ-adic Z[λ]
H^1_dR(E/Z[λ]) = ⟨ω, D(ω)⟩
=> ∃ ω_q ∈ H^1_q-dR(E/Z[λ]) s.th.
H^1(E, fil^1_q-Hdg q-Ω_E/Z[λ]) = ⟨ω_q, (q-1) D_q(ω_q)⟩
choose ω_q ∈ H^1(E, q-Hdg_E/Z[λ]) = H^1_H(E/Z[λ])


involve a special function
(q;q)_k or (x;q)_k = (1-x)(1-qx)...(1-q^(k-1)x)
k≥0 (k=∞ allowed)
Thm (_Wheeler) Fix K, Δ_K(t) ∈ Z[t^±1] Alex poly
Δ_K(1)=1
Then ∃! f_K(t,q) ∈ H with property
Z[t^±1, 1/Δ(t)]

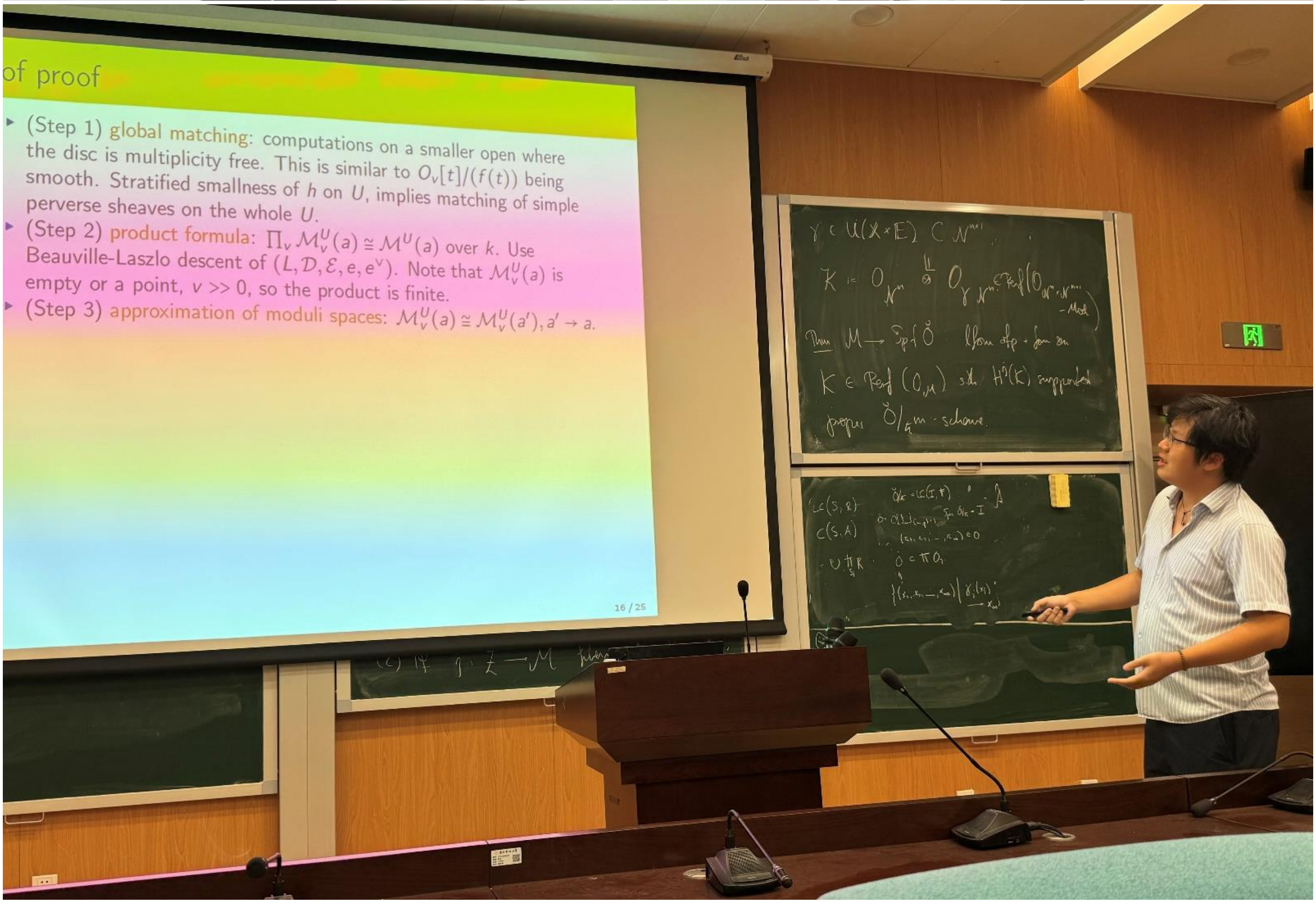

is independent of x
U = complement of
Step VII
then apply

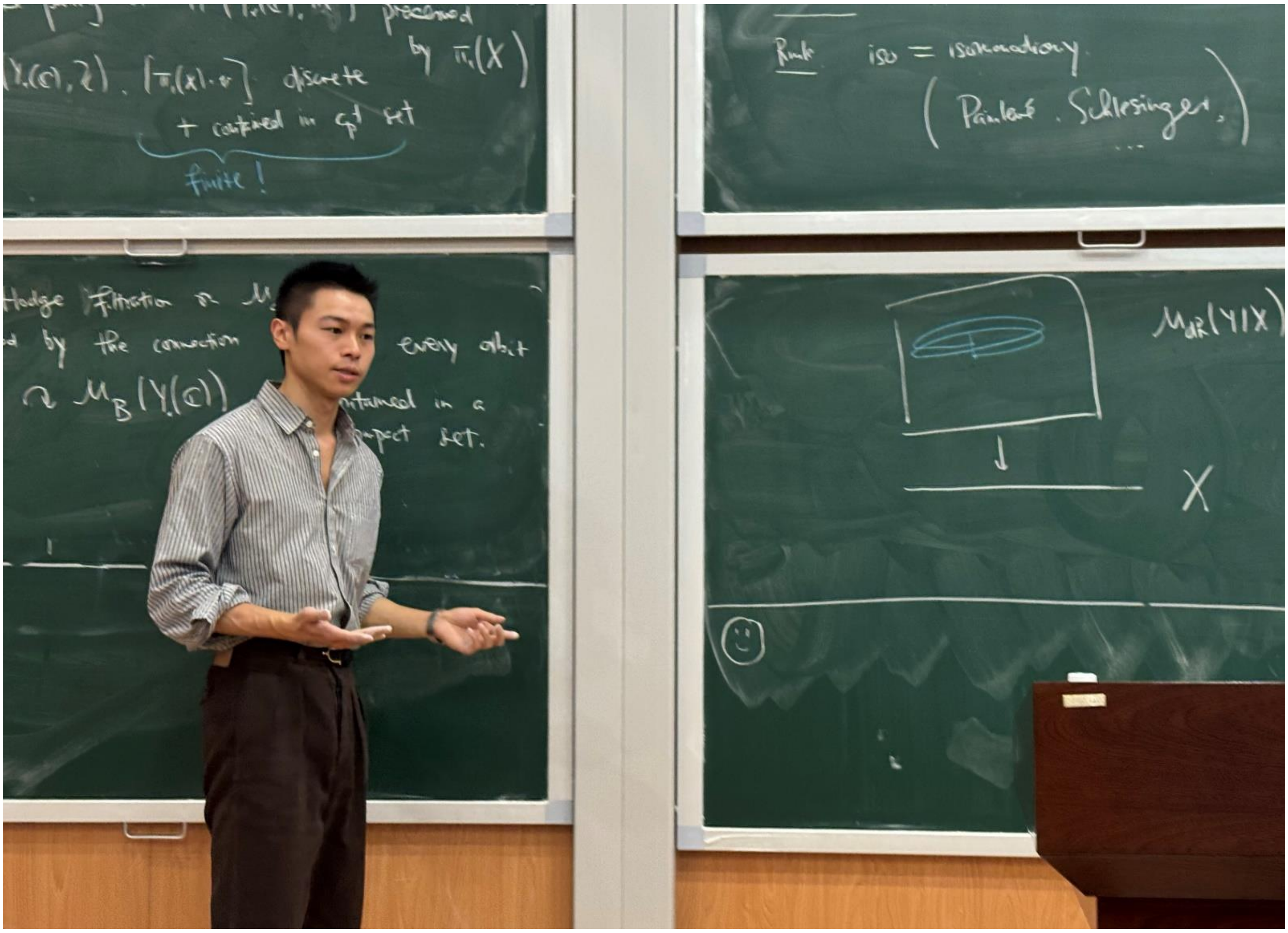

Remove singularities
Consider
Fact This is a finite free diff mod
of full rk
by enlarging K, can make sure
has enough Γ_K-invariance !

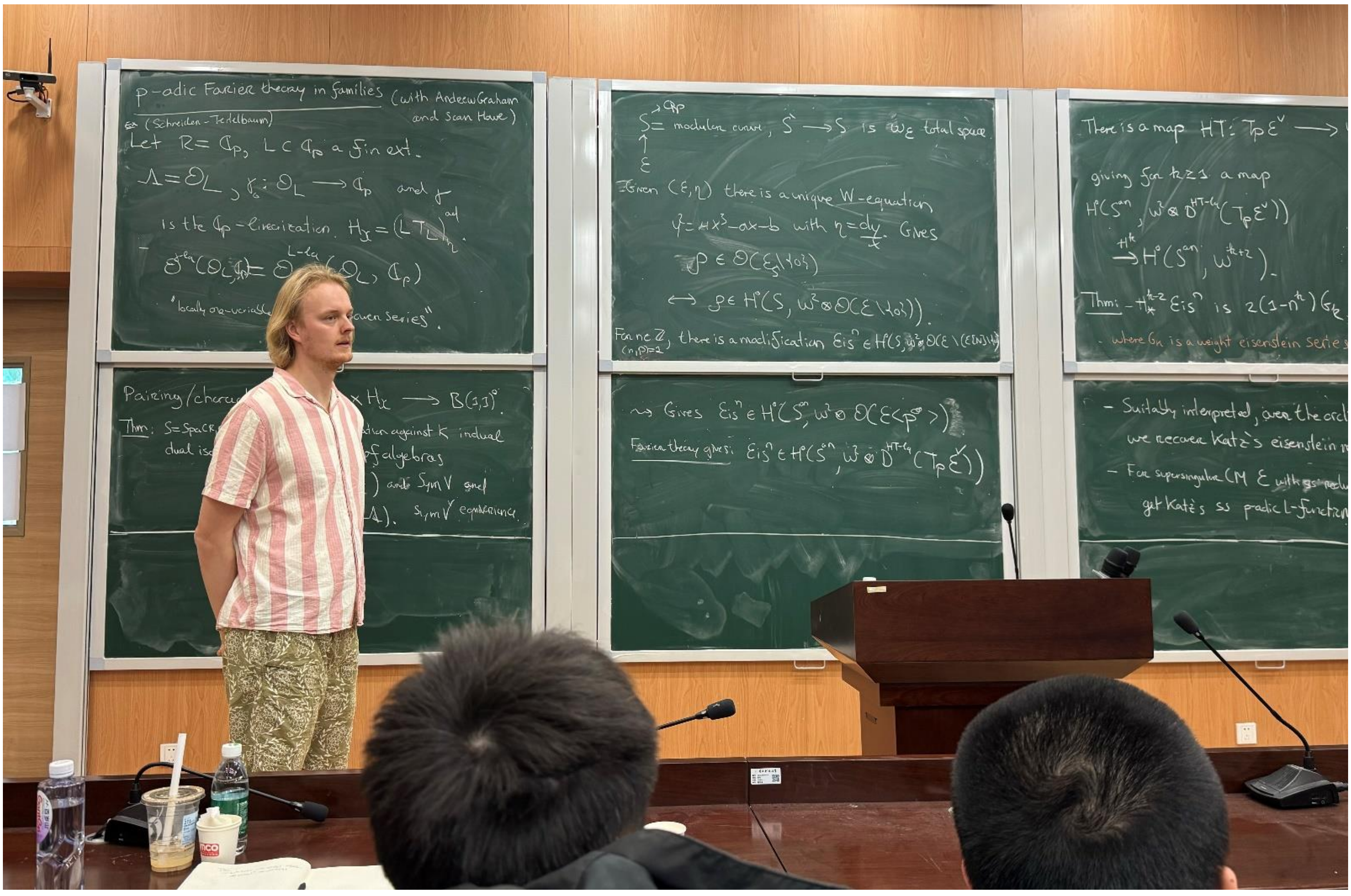

2) How can we view $G_{\mathbb{Q}_p}$ as an analytic stacks
$C^{cont}(G_{\mathbb{Q}_p}, \mathbb{Z}_p) \xrightarrow{\text{AnSpec}} G^1_{\mathbb{Q}_p}$
This distinction does not matter for us
$C^{sm}(G_{\mathbb{Q}_p}, \mathbb{Z}_p) \xrightarrow{\text{AnSpec}} G^2_{\mathbb{Q}_p}$
which are locally constant
Prof
$G_{\mathbb{Q}_p} = \lim G_K$
1) You need to view all
as
analytic stacks
Exp. You don't want
3)
4)


Schematic
(harder computation).
Hecke correspondence


Main Results
Assumptions:
· G is well-understood, i.e. classical Local Langlands known for
Prop: Can now define
Thm: (i) Rψ preserves compact objects.
(ii) If aψ is fully faithful, then so is Rψ
(i) relies on new (unconditional) results on


of proof
(Step 1) global matching: computations on a smaller open where the disc is multiplicity free. This is similar to $O_v[t]/(f(t))$ being smooth. Stratified smallness of h on U, implies matching of simple perverse sheaves on the whole U.
(Step 2) product formula: $\prod_v \mathcal{M}_v^U(a) \cong \mathcal{M}^U(a)$ over k. Use Beauville-Laszlo descent of $(L, \mathcal{D}, \mathcal{E}, e, e^\vee)$. Note that $\mathcal{M}_v^U(a)$ is empty or a point, $v >> 0$, so the product is finite.
(Step 3) approximation of moduli spaces: $\mathcal{M}_v^U(a) \cong \mathcal{M}_v^U(a'), a' \to a$.
16 / 25



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