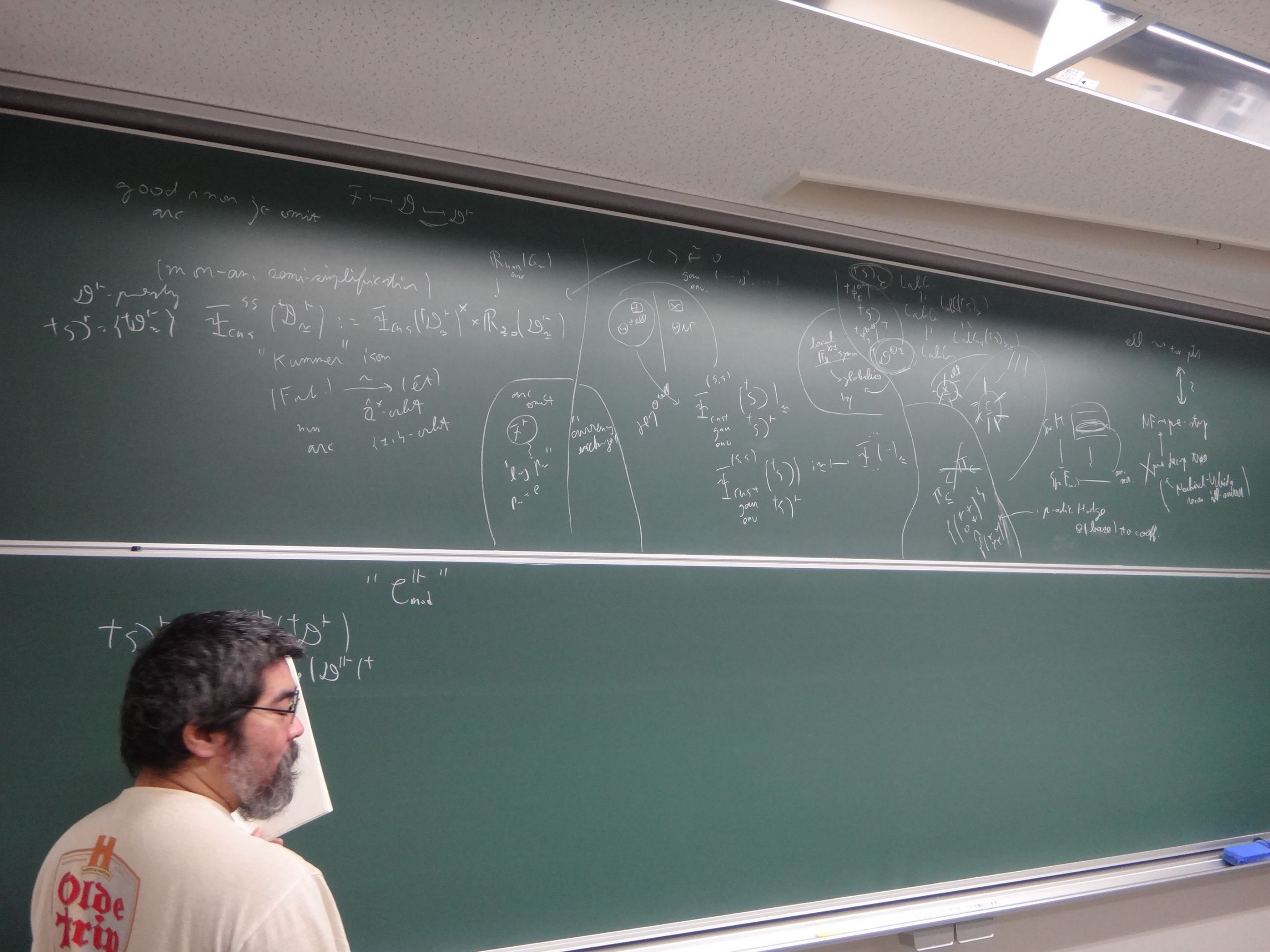


good
arc
omit
(non-arc. semi-simplification)
"Kummer" isom
arc
omit
currency exchange
gau
env
local
globalize
ell ~ tors pts
p-adic Hodge
Θ(base) no coeff.
Nakamura-Uchida
"C_mod"
Olde
Trip

"$\mathcal{C}^{\Vdash}_{\mathrm{mod}}$" ($\leftarrow$ Spec F_{mod})

${}^{\dagger}\mathfrak{S}^{\vdash} \mapsto \mathcal{D}^{\Vdash}({}^{\dagger}\mathfrak{S}^{\vdash})$

w/ $\mathrm{Prime}(\mathcal{D}^{\Vdash}({}^{\dagger}\mathfrak{S}^{\vdash})) \xrightarrow{\sim} \underline{\mathbb{V}}$

& $\{{}^{\dagger}\rho_{\mathcal{D}^{\Vdash},\underline{v}} : \underbrace{\Phi_{\mathcal{D}^{\Vdash}({}^{\dagger}\mathfrak{S}^{\vdash}),\underline{v}}}_{\text{gl.}} \xrightarrow{\sim} \underbrace{\mathbb{R}_{\geq 0}({}^{\dagger}\mathfrak{S}^{\vdash}_{\underline{v}})}_{\text{loc}}\}_{\underline{v}\in\underline{\mathbb{V}}}$

$\boxed{+}$ | $\boxed{\times}$

$\mathbb{R}_{\mathrm{arc}}$

[IUTch II, Cor 4.7] (Π-theoretic version assoc. to $\mathcal{D}$-ΘNF-HT)

${}^{\dagger}\mathcal{HT}^{\mathcal{D}\text{-}\Theta\mathrm{NF}} = ({}^{\dagger}\mathcal{D}^{\circledast} \xleftarrow{{}^{\dagger}\phi^{\mathrm{NF}}_{*}} {}^{\dagger}\mathfrak{S}_{j} \xrightarrow{{}^{\dagger}\phi^{\Theta}_{j}} {}^{\dagger}\mathfrak{S}_{>})$ — $\mathcal{D}$-ΘNF-Hodge theater

${}^{\dagger}\mathcal{HT}^{\mathcal{D}\text{-}\Theta^{\pm}\mathrm{ell}}$ — patching

$({}^{\dagger}\mathcal{D}^{\odot\pm} \leftarrow {}^{\dagger}\mathfrak{S}_{T} \rightarrow {}^{\dagger}\mathfrak{S}_{\succ})$

$\mathcal{D}^{\Vdash}(\ldots)$

$|T| \setminus \{0\} =: T^{*} = J$

(i) (non-realified gl. nbr.)

${}^{\dagger}\mathcal{D}^{\circledast} \rightsquigarrow {}^{\dagger}\mathcal{D}^{\circledast} \to {}^{\dagger}\mathcal{D}^{\circledast}$

"$\subseteq_{F}$" "$C_{F_{\mathrm{mod}}}$"

$\rightsquigarrow_{\S 8}$ $\pi_1({}^{\dagger}\mathcal{D}^{\circledast}) \curvearrowright \mathbb{M}^{\circledast}({}^{\dagger}\mathcal{D}^{\circledast})$, $\overline{\mathbb{M}}^{\circledast}({}^{\dagger}\mathcal{D}^{\circledast})$, $\mathbb{M}^{\circledast}_{\mathrm{mod}}({}^{\dagger}\mathcal{D}^{\circledast})$, $\mathbb{M}^{\circledast}_{\mathrm{mod}}({}^{\dagger}\mathcal{D}^{\circledast})$

"$\overline{F}^{\times}$" "$F^{\times}_{\mathrm{mod}}$" "$F_{\mathrm{mod}}$"

$\pi_1^{\mathrm{rat}}({}^{\dagger}\mathcal{D}^{\circledast}) \curvearrowright \mathbb{M}^{\circledast}_{\infty\kappa}({}^{\dagger}\mathcal{D}^{\circledast})$ "$\overline{F}$"

$\infty\kappa\times$, κ

cusps — field: $\mathcal{F}^{\circledast}_{\mathrm{mod}}({}^{\dagger}\mathcal{D}^{\circledast}) \subseteq \mathcal{F}^{\circledast}({}^{\dagger}\mathcal{D}^{\circledast}) \supseteq \mathcal{F}^{\circledast}({}^{\dagger}\mathcal{D}^{\circledast})$

${}^{\dagger}\mathcal{F}^{\circledast}|_{\mathrm{mod}}$, ${}^{\dagger}\mathcal{F}^{\circledast}|_{{}^{\dagger}\mathcal{D}^{\circledast}}$

$\mathrm{Prime}(\mathcal{F}^{\circledast}_{\mathrm{mod}}({}^{\dagger}\mathcal{D}^{\circledast})) \cong \underline{\mathbb{V}}$

no $\pi_1({}^{\dagger}\mathcal{D}^{\circledast})$-any: mono-anab.

But, no Kummer theory ~ cusps/... fields

$\mathcal{F} \mapsto \mathcal{D} \mapsto \mathcal{D}^{\vdash}$

good non arc $\}$ ← omit

$\mathbb{R}_{\mathrm{non\text{-}arc}}(G_v)$

(mono-an. semi-simplification)

$\mathcal{D}^{\vdash}$-prime-strip: ${}^{\dagger}\mathfrak{S}^{\vdash} = \{{}^{\dagger}\mathcal{D}^{\vdash}_{\underline{v}}\}$

$\overline{\Phi}^{ss}_{\mathrm{cns}}({}^{\dagger}\mathcal{D}^{\vdash}_{\underline{v}}) := \overline{\Phi}_{\mathrm{cns}}({}^{\dagger}\mathcal{D}^{\vdash}_{\underline{v}})^{\times} \times \mathbb{R}_{\geq 0}(\mathcal{D}^{\vdash}_{\underline{v}})$

"Kummer" isom

$(\mathcal{F}_{\mathrm{mod}}) \xrightarrow{\sim} (\mathrm{\acute{e}t})$

non arc: $\hat{\mathcal{O}}^{\times}$-orbit, $\{\pm 1\}$-orbit

arc omit: $\mathcal{F}^{\vdash}$ "log μ" $\mu = e$

"currency exchange"

$\boxed{+}$ $\Theta^{\pm \mathrm{ell}}$ | $\boxed{\times}$ $\Theta\mathrm{NF}$

$\langle\ \rangle \xleftarrow{\sim} 0$ $(\ldots, j^2, \ldots)$ gau env.

$\mathcal{HT}^{\Theta^{\pm\mathrm{ell}}}$

$\overline{\Phi}^{(\mathfrak{S},\mathfrak{S})}_{\mathrm{cns}\text{-}\mathrm{gau}\text{-}\mathrm{env}}({}^{\dagger}\mathfrak{S}^{\vdash})|_{\underline{v}}$

$\overline{\Phi}^{(\mathfrak{S},\mathfrak{S})}_{\mathrm{cns}\text{-}\mathrm{gau}\text{-}\mathrm{env}}({}^{\dagger}\mathfrak{S}^{\vdash}) \xrightarrow{\sim} \overline{\Phi}(\cdot)|_{\underline{v}}$

${}^{\dagger}\mathfrak{S}_{\succ}$ LabCusp, ${}^{\dagger}\phi^{\Theta^{\pm}}_{\pm}$, ${}^{\dagger}\mathfrak{S}_{\succ}$, ${}^{\dagger}\phi^{\Theta^{\pm}}_{T}$, ${}^{\dagger}\mathcal{D}^{\odot\pm}$

LabCusp $\cong$ LabCusp$({}^{\dagger}\mathfrak{S}_{\succ})$ $\cong$ LabCusp$({}^{\dagger}\mathfrak{S}_{\succ})$

local $\mathbb{F}^{\rtimes\pm}_{l}$-symm. → globalize by

$\Pi_{\underline{v}}$ $\{\begin{pmatrix} 1 & * \\ 0 & 1 \end{pmatrix}\}$

p-adic Hodge: $\mathcal{O}$(base) no coeff.

Spec K — Spec F_{mod}; ari. hol.

ell ~ tor. pts ↕ ? NF ~ pr. str.

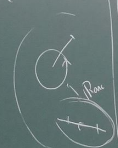
X ~ deep tors (← Mochizuki-Uchida: mono-anab.)

$^{\dagger}\mathfrak{S})^{\vdash} \longmapsto \mathcal{D}^{\Vdash}(^{\dagger}\mathfrak{S})^{\vdash})$ "$\mathcal{C}^{\Vdash}_{\mathrm{mod}}$" ($\leftarrow \mathrm{Spec}\, F_{\mathrm{mod}}$)

w/ $\mathrm{Prime}(\mathcal{D}^{\Vdash}(^{\dagger}\mathfrak{S})^{\vdash})) \xrightarrow{\sim} \underline{\mathbb{V}}$

& $\{^{\dagger}\rho_{\mathcal{D}^{\Vdash},\underline{v}} : \underset{\text{sp.}}{\Phi_{\mathcal{D}^{\Vdash}(^{\dagger}\mathfrak{S})^{\vdash}),\underline{v}}} \xrightarrow{\sim} \underset{\text{loc}}{\mathbb{R}_{\geq 0}(^{\dagger}\mathfrak{S})^{\vdash}_{\underline{v}})}\}_{\underline{v}\in\underline{\mathbb{V}}}$

$\boxed{\text{I}}$



$\boxed{\text{X}}$

[IUTchII, Cor4.7] (Π-tic moments assoc. to $\mathcal{D}$-ΘNF-HT)

$^{\dagger}\mathcal{HT}^{\mathcal{D}\text{-}\Theta\mathrm{NF}} = (^{\dagger}\mathcal{D}^{\circledcirc} \xleftarrow{^{\dagger}\phi^{\mathrm{NF}}_{*}} \{^{\dagger}\mathfrak{S}\}_{j} \xrightarrow{^{\dagger}\phi^{\Theta}_{*}} {}^{\dagger}\mathfrak{S}_{>})$ — $\mathcal{D}$-ΘNF-Hodge theater

$^{\dagger}\mathcal{HT}^{\mathcal{D}\text{-}\Theta\pm\mathrm{ell}}$ — gluing

$(^{\dagger}\mathcal{D}^{\circledcirc\pm} \leftarrow \{^{\dagger}\mathfrak{S}\}_{T} \rightarrow \{^{\dagger}\mathfrak{S}\}_{t})$

$\mathcal{D}^{\Vdash}(\ldots)$

$|T| \setminus \{0\} =: T^{*} = J$

(i) (non-real'd gl. str.)

$^{\dagger}\mathcal{D}^{\circledcirc} \rightsquigarrow {}^{\dagger}\mathcal{D}^{\circledcirc} \longrightarrow {}^{\dagger}\mathcal{D}^{\circledast}$

("$\underline{\mathbb{C}}_{K}$" "$C_{F_{\mathrm{mod}}}$")

$\rightsquigarrow \pi_1(^{\dagger}\mathcal{D}^{\circledast}) \curvearrowright \mathbb{M}^{\circledast}(^{\dagger}\mathcal{D}^{\circledcirc})$, $\overline{\mathbb{M}}^{\circledast}(^{\dagger}\mathcal{D}^{\circledcirc})$, $\underset{\text{"}F^{\times}_{\mathrm{mod}}\text{"}}{\mathbb{M}^{\circledast}_{\mathrm{mod}}(^{\dagger}\mathcal{D}^{\circledcirc})}$, $\underset{\text{"}F_{\mathrm{mod}}\text{"}}{\overline{\mathbb{M}}^{\circledast}_{\mathrm{mod}}(^{\dagger}\mathcal{D}^{\circledcirc})}$

§8

(Belyi cusp'ntn) $\pi_1^{\mathrm{rat}}(^{\dagger}\mathcal{D}^{\circledast}) \curvearrowright \mathbb{M}^{\circledast}_{\infty\kappa}(^{\dagger}\mathcal{D}^{\circledcirc})$ "$\overline{F}^{\times}$" "$\overline{F}$" $\infty\kappa$, $\infty\kappa\times$, κ

no $\pi_1(^{\dagger}\mathcal{D}^{\circledast})$-conj' indet

$\rightsquigarrow$ (Rat. and Kummer $\rightsquigarrow$ diag Kummer not compat w/ log-link)

corresp. Frd

$\mathcal{F}^{\circledcirc}_{\mathrm{mod}}(^{\dagger}\mathcal{D}^{\circledcirc}) \subseteq \mathcal{F}^{\circledcirc}(^{\dagger}\mathcal{D}^{\circledcirc}) \supseteq \overline{\mathcal{F}}^{\circledcirc}(^{\dagger}\mathcal{D}^{\circledcirc})$

$^{\dagger}\mathcal{F}^{\circledcirc}|_{\mathrm{term.\,obj.}}$ $=^{\dagger}\mathcal{D}^{\circledcirc}$ $^{\dagger}\overline{\mathcal{F}}^{\circledcirc}|_{^{\dagger}\mathcal{D}^{\circledcirc}}$

$\mathrm{Prime}(\mathcal{F}^{\circledcirc}_{\mathrm{mod}}(^{\dagger}\mathcal{D}^{\circledcirc})) \xrightarrow{\sim} \underline{\mathbb{V}}$

real'd $\mathcal{F}^{\circledcirc}_{\mathrm{mod}}(^{\dagger}\mathcal{D}^{\circledcirc}) \to \mathcal{F}^{\circledcirc\mathbb{R}}_{\mathrm{mod}}(^{\dagger}\mathcal{D}^{\circledcirc})$

(ii) $j \in \mathrm{LabCusp}(^{\dagger}\mathcal{D}^{\circledcirc}) \xrightarrow{\sim} J \; (\cong \mathbb{F}_{l}^{*})$

$\underline{\mathbb{V}}^{\mathrm{Bor}} \supseteq \underline{\mathbb{V}}^{\pm\mathrm{un}} \twoheadrightarrow \underline{\mathbb{V}}/\pm$, $\underline{\mathbb{V}}_{\mathrm{mod}}$

$\mathcal{F}^{\circledcirc}(^{\dagger}\mathcal{D}^{\circledcirc}) \underset{\text{"}\mathrm{glm}\text{"}}{\rightsquigarrow} \mathcal{F}^{\circledcirc}(^{\dagger}\mathcal{D}^{\circledcirc})|_{j}$ $\mathcal{F}$-prime-strip well-def'd up to isom

$\mathbb{F}_{l}^{*} \curvearrowright {}^{\dagger}\mathcal{D}^{\circledcirc}$ poly action perm'n

induces isom's

$\{\mathcal{F}^{\circledcirc}(^{\dagger}\mathcal{D}^{\circledcirc})|_{j}$, $\mathbb{M}^{(-)\circledast}_{\mathrm{mod}}(^{\dagger}\mathcal{D}^{\circledcirc})_{j}$,

$\mathcal{F}^{\circledcirc}_{\mathrm{mod}}(^{\dagger}\mathcal{D}^{\circledcirc})_{j} \to \mathcal{F}^{\circledcirc\mathbb{R}}_{\mathrm{mod}}(^{\dagger}\mathcal{D}^{\circledcirc})_{j}$,

$\pi_1^{\mathrm{rat}}(^{\dagger}\mathcal{D}^{\circledast}) \curvearrowright \mathbb{M}^{\circledast}_{\infty\kappa}(^{\dagger}\mathcal{D}^{\circledcirc})\}_{j}$

for distinct j's

$\mathbb{F}_{l}^{*}$-symmetrizing isom

$(-)_{\langle\mathbb{F}_{l}^{*}\rangle} \subset \prod_{j\in\mathbb{F}_{l}^{*}} (-)_{j}$

mod

others $\rightsquigarrow (\;)_{\langle\mathbb{F}_{l}^{*}\rangle}$ symbol for $\mathbb{F}_{l}^{*}$-symm. isoms

(iii) (local factors & real'd gl. str.)

$j \in \mathrm{LabCusp}(^{\dagger}\mathcal{D}^{\circledcirc})$

$^{\dagger}\mathcal{D}^{\circledcirc} \underset{\text{for alg'm}}{\longmapsto}$

Frd — prime-strip

$\mathcal{F}^{\circledcirc}_{\mathrm{mod}}(^{\dagger}\mathcal{D}^{\circledcirc})_{j} \xrightarrow{\text{glo to loc}} \mathcal{F}^{\circledcirc}(^{\dagger}\mathcal{D}^{\circledcirc})|_{j}$

$\mathcal{F}^{\circledcirc\mathbb{R}}_{\mathrm{mod}}(^{\dagger}\mathcal{D}^{\circledcirc})_{j} \longrightarrow (\mathcal{F}^{\circledcirc}(^{\dagger}\mathcal{D}^{\circledcirc})|_{j})^{\mathbb{R}}$

$\{\pi_1^{\mathrm{rat}}(^{\dagger}\mathcal{D}^{\circledast}) \curvearrowright \mathbb{M}^{\circledast}_{\infty\kappa}(^{\dagger}\mathcal{D}^{\circledcirc}) \to \mathbb{M}_{\infty\kappa}(^{\dagger}\mathcal{D}_{\underline{v}_j}) \subseteq \mathbb{M}_{\infty\kappa\times}(^{\dagger}\mathcal{D}_{\underline{v}_j})\}_{\underline{v}\in\underline{\mathbb{V}}}$

$\mathcal{D}^{\Vdash}((\mathcal{F}^{\circledcirc}(^{\dagger}\mathcal{D}^{\circledcirc})|_{j})^{\Vdash}) \xrightarrow{\sim} \mathcal{F}^{\circledcirc\mathbb{R}}_{\mathrm{mod}}(^{\dagger}\mathcal{D}^{\circledcirc})_{j}$

$\mathbb{R}_{\geq 0}((\mathcal{F}^{\circledcirc}(^{\dagger}\mathcal{D}^{\circledcirc})|_{j})^{\Vdash})_{\underline{v}} \xrightarrow{\sim} \Phi(\mathcal{F}^{\circledcirc}(^{\dagger}\mathcal{D}^{\circledcirc})|_{j})^{\mathbb{R}}_{\underline{v}}$

$\mathcal{D}$-ⓗNF-HT ← ét-like

ⓗNF-HT ← Frd.-like

↘ similar obj's + Kummer

([IUTchII, Cor 4.8])

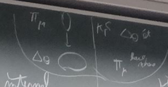
[IUTchII, Def 4.9]

(i) $G\ (\xrightarrow{\sim} G_{\underline{v}})$

$\longmapsto G \curvearrowright \mathcal{O}^{\triangleright}(G),\ \mathcal{O}^{\times\mu}(G)$

$\mathcal{C} \xrightarrow[\text{Fr'd}]{} \mathcal{D}$ $\quad A \in^{\mu_0} \mathrm{Ob}(\mathcal{D})$

universal covering obj



internal

external

$\underline{\times\text{-Kummer str. on } \mathcal{C}}$ $\overset{\text{def}}{\Longleftrightarrow}$ a $\hat{\mathbb{Z}}^{\times}$-orbit of isom $\mathcal{O}^{\triangleright}(G) \xrightarrow{\sim} \mathcal{O}^{\triangleright}(A)$

$\underline{\times\mu\text{-Kummer str. on } \mathcal{C}}$ $\overset{\text{def}}{\Longleftrightarrow}$ an Ism-orbit of isom $\mathcal{O}^{\times\mu}(G) \xrightarrow{\sim} \mathcal{O}^{\times\mu}(A)$

$\kappa^{\times\mu}$: $\times\mu$-Kummer str.

$H \underset{\text{open}}{\subset} G$

$\rightsquigarrow \mathcal{I}^{\kappa}_{H}(A) := \mathrm{Im}\{\mathcal{O}^{\times}(G)^{H} \to \mathcal{O}^{\times\mu}(G) \xrightarrow{\kappa^{\times\mu}} \mathcal{O}^{\times\mu}(A)\}$

(split) $\underline{\times\text{-Kummer Fr'd}}$ $\overset{\text{def}}{\Longleftrightarrow}$ Fr'd w/ $\times$-Kummer str.
$\times\mu$- (split) $\times\mu$-

(ii) ${}^{\dagger}\mathfrak{F}^{\vdash} = \{{}^{\dagger}\mathcal{F}^{\vdash}_{\underline{v}}\}_{\underline{v}\in}$

(ii) $^\dagger\mathfrak{F}^{\vdash} = \{ ^\dagger\mathcal{F}^{\vdash}_{\underline{v}} \}_{\underline{v}\in\underline{\mathbb{V}}}$ split Fr'd

$\leadsto$ $\mathcal{F}^{\vdash}$-prime-strip

$^\dagger\mathfrak{D}^{\vdash} = \{ ^\dagger\mathcal{D}^{\vdash}_{\underline{v}} \}_{\underline{v}\in\underline{\mathbb{V}}}$

$\underline{v}$: bad $^\dagger A \in \mathrm{Mo\text{-}Ob}(^\dagger\mathcal{D}^{\vdash}_{\underline{v}})$

univ. cov. obj.

$^\dagger G := \mathrm{Aut}(^\dagger A)$

$\mu_{2l}(^\dagger A) < \mathcal{O}^\times(^\dagger A) < \mathcal{O}^\triangleright(^\dagger A)$

$\mathcal{O}^\triangleright(^\dagger A) \supset \mathcal{O}^\perp(^\dagger A) := \langle \mu_{2l}(^\dagger A),$ the image of splitting given by $^\dagger\mathcal{F}^{\vdash}_{\underline{v}} \rangle$

$\big(\mu_{2l}\cdot \underline{q}^{\mathbb{N}}_{\underline{v}},\ \mu_{2l}\cdot \underline{\Theta}^{\mathbb{N}}_{\underline{v}},\ \mu_{2l}\{\underline{q}^{j^2/2l}_{\underline{v}}\} \big)$

$\mathcal{O}^\circledast(^\dagger A) := \mathcal{O}^\perp(^\dagger A)/\mu_{2l}(^\dagger A) \xrightarrow{\sim} \mathcal{O}^\triangleright(^\dagger A)/\mathcal{O}^\times(^\dagger A)$

$\mathcal{O}^{\circledast\times\mu}(^\dagger A) := \mathcal{O}^\circledast(^\dagger A) \times \mathcal{O}^{\times\mu}(^\dagger A)$

$^\dagger G \longmapsto (^\dagger G \curvearrowright \mathcal{O}^\times(^\dagger G))$

$\leadsto$ $\exists!$ $\hat{\mathbb{Z}}^\times$-orbit of isom

$^\dagger\kappa^{\vdash\times}_{\underline{v}} : \mathcal{O}^\times(^\dagger G) \xrightarrow{\sim} \mathcal{O}^\times(^\dagger A)$

w/ $^\dagger G$-action

modulo $\mathcal{O}^\mu(-)$

Ism-orbit of isom

$^\dagger\kappa^{\vdash\times\mu}_{\underline{v}} : \mathcal{O}^{\times\mu}(^\dagger G) \xrightarrow{\sim} \mathcal{O}^{\times\mu}(^\dagger A)$

$^\dagger G \curvearrowright \mathcal{O}^{\circledast\times\mu}(^\dagger A)$

& divisor monoid of $^\dagger\mathcal{F}^{\vdash}_{\underline{v}}$

$\leadsto$ split Fr'd

$^\dagger\mathcal{F}^{\vdash\circledast\times\mu}_{\underline{v}}$ $\leftarrow$ $\mathcal{O}^\times(^\dagger A) = \mathcal{O}^{\times\mu}(^\dagger A)$ (original)

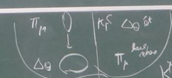
$\leftarrow$ $\mathcal{O}^\triangleright(^\dagger A) = \mathcal{O}^{\circledast\times\mu}(^\dagger A)$ (original)

$^\dagger\kappa^{\vdash\times\mu}_{\underline{v}}$ $\leadsto$ $\times\mu$-Kummer str. $\leadsto$ split $\times\mu$-Fr'd

$^\dagger\mathcal{F}^{\vdash}_{\underline{v}}$ $\leadsto$ $^\dagger\kappa^{\vdash\times}_{\underline{v}}$: $\times$-Kummer str

split $\times$-Kummer Fr'd

$\underline{v}$: good, arc, similar



internal

external

$\mathcal{D}$-ΘNF-HT $\leftarrow$ ét-like

ΘNF-HT $\leftarrow$ Frd.-like

$\searrow$ similar obj's + Kummer

([IUTchII, Cor 4.8])

[IUTchII, Def 4.9]

(i) G $(\cong G_{\underline{v}})$ $\longmapsto$ $G \curvearrowright \mathcal{O}^\times(G),\ \mathcal{O}^{\times\mu}(G)$

$\mathcal{C} \xrightarrow[\text{Fr'd}]{} \mathcal{D}$ $A \in \mathrm{Mo\text{-}Ob}(\mathcal{D})$

universal covering obj

$\times$-Kummer str. on $\mathcal{C}$ $\overset{\text{def}}{\Longleftrightarrow}$ a $\hat{\mathbb{Z}}^\times$-orbit of isom $\mathcal{O}^\times(G) \xrightarrow{\sim} \mathcal{O}^\times(A)$

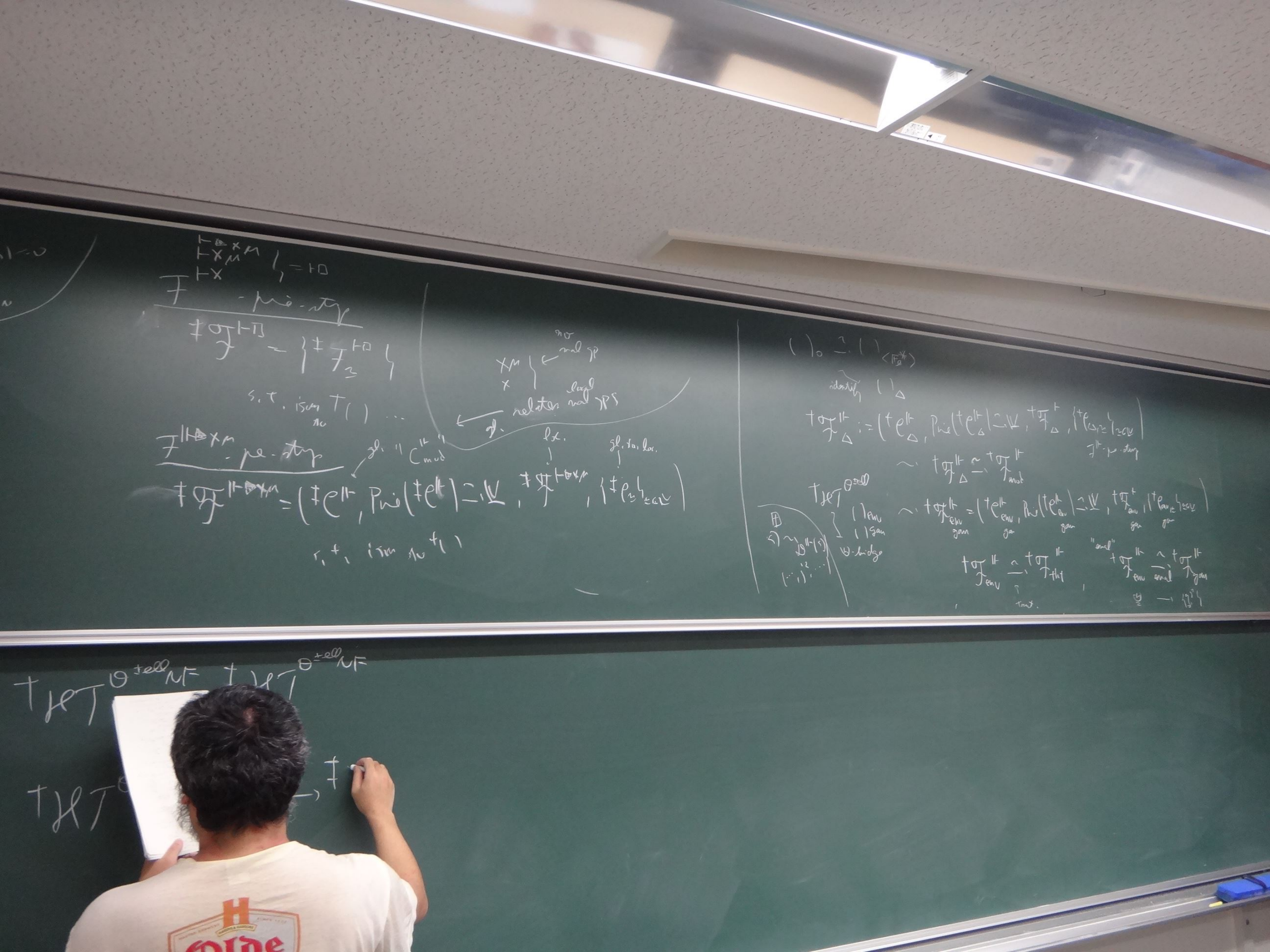
$\times\mu$-Kummer str. on $\mathcal{C}$ $\overset{\text{def}}{\Longleftrightarrow}$ an Ism-orbit of isom $\mathcal{O}^{\times\mu}(G) \xrightarrow{\sim} \mathcal{O}^{\times\mu}(A)$

$\kappa^{\times\mu}$: $\times\mu$-Kummer str.

$H \underset{\text{open}}{\subset} G$

$\leadsto$ $\mathcal{I}^{\kappa}_{H}(A) := \mathrm{Im}\big(\mathcal{O}^\times(G)^H \to \mathcal{O}^{\times\mu}(G) \xrightarrow{\kappa^{\times\mu}} \mathcal{O}$

(split) $\times$-Kummer Fr'd ($\times\mu$-) $\overset{\text{def}}{\Longleftrightarrow}$ (split) Fr'd w/ $\times$-Kummer str. ($\times\mu$-)


-prime-strip
s.t. isom
relates
gl.
lx.
gl. to loc.
identify
Θ-bridge
"small"

${}^{\dagger}\mathcal{HT}^{\Theta^{\pm ell}NF}$, ${}^{\ddagger}\mathcal{HT}^{\Theta^{\pm ell}NF}$

Frobe picture

$\underline{\mathbb{G}^{\times\mu}\text{-Kmt}}$

$\underline{\mathbb{G}^{\times\mu}_{gau}\text{-Kmt}}$

$${}^{\dagger}\mathcal{HT}^{\Theta^{\pm ell}NF} \xrightarrow{\mathbb{G}^{\times\mu}} {}^{\ddagger}\mathcal{HT}^{\Theta^{\pm ell}NF}$$

$\mathbb{G}^{\times\mu}_{gau}$

(d) full poly-isom ${}^{\dagger}\mathfrak{F}^{\Vdash\blacktriangleright\times\mu}_{env} \longrightarrow {}^{\ddagger}\mathfrak{F}^{\Vdash\blacktriangleright\times\mu}_{\Delta}$

of $\mathcal{F}^{\Vdash\blacktriangleright\times\mu}$-prestrip

gau

env. $\mathcal{O}^{\times\mu}$ $\mathbb{G}^{\mu}$ $\sim \mathcal{O}^{\times} q^{\mu}$

gau. $\mathcal{O}^{\times\mu}$ $|q^{j^2}|^{\mu}$ $\sim \mathcal{O}^{\times} q^{\mu}$

} val. → values

for AR → stable

${}^{n}\mathcal{HT}^{D\text{-}\Theta^{\pm ell}NF}$

hol.

$\mathfrak{S}^{\Vdash}_{\Delta}$

(no $\{\iota, \langle\ \rangle\}$)

${}^{n+1}\mathcal{HT}^{D\text{-}\Theta^{\pm ell}NF}$

hol.

mono

$\log|\mu| = 0$

an $\{\mathcal{O}_K/\mu_N\}_N$

$\left.\begin{array}{l}\vdash\blacktriangleright\times\mu\\ \vdash\times\mu\end{array}\right\} = \vdash\Box$

$\vdash\times$

$\underline{\mathcal{F}^{\vdash\times}\text{-prestrip}}$

${}^{\ddagger}\mathfrak{F}^{\vdash\Box} = \{{}^{\ddagger}\mathcal{F}^{\vdash\Box}_{\underline{v}}\}$

s.t. isom ${}^{\dagger}(\ )$ ...

$\times\mu$ } ← no val gp

$\times$ } relation log val gps

gl. loc. gl. to loc.

gl. ${}^{\Vdash}\mathcal{C}^{\Vdash}_{mod}$

$\underline{\mathcal{F}^{\Vdash\blacktriangleright\times\mu}\text{-prestrip}}$

${}^{\ddagger}\mathfrak{F}^{\Vdash\blacktriangleright\times\mu} = ({}^{\ddagger}\mathcal{C}^{\Vdash}, \mathrm{Prime}({}^{\ddagger}\mathcal{C}^{\Vdash}) \cong \underline{\mathbb{V}}, {}^{\ddagger}\mathcal{F}^{\vdash\blacktriangleright\times\mu}, \{{}^{\ddagger}\rho_{\underline{v}}\}_{\underline{v}\in\underline{\mathbb{V}}})$

$(\ )_0 \xrightarrow{\sim} (\ )_{\langle \mathbb{F}_l^* \rangle}$

identify $(\ )_\Delta$

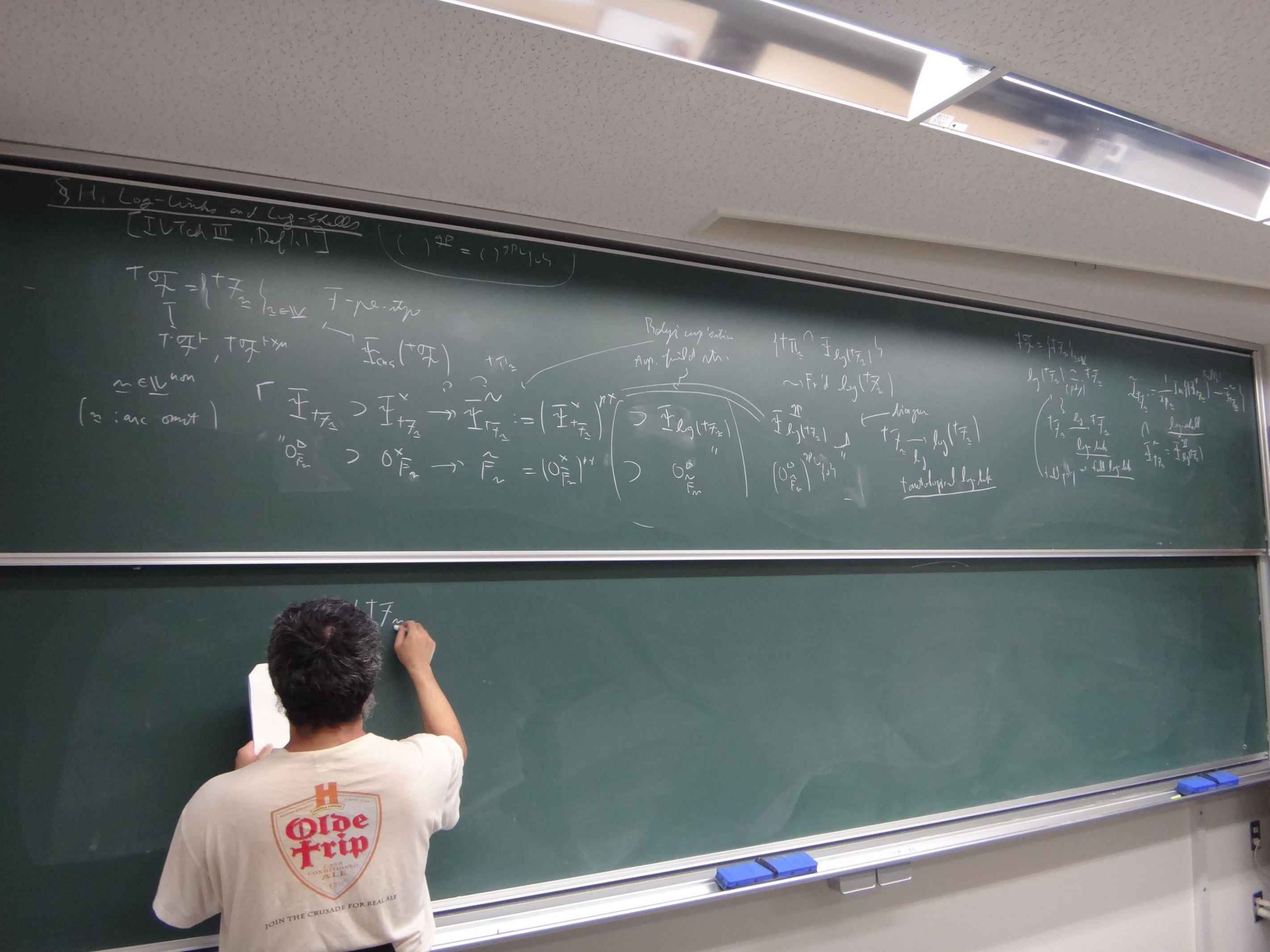
${}^{\dagger}\mathfrak{S}^{\Vdash}_{\Delta} := ({}^{\dagger}\mathcal{C}^{\Vdash}_{\Delta}, \mathrm{Prime}({}^{\dagger}\mathcal{C}^{\Vdash}$ ...

$\sim {}^{\dagger}\mathfrak{F}^{\Vdash}_{\Delta}$ ...

${}^{\dagger}\mathcal{HT}^{\Theta^{\pm ell}}$ } $(\ )_{env}$, $(\ )_{gau}$, Θ-bridge $\sim {}^{\dagger}\mathfrak{F}^{\Vdash}_{env}$ =

gau

⊞ $\mathfrak{S} \sim \mathfrak{F}^{\Vdash}(\ )$ ... $(\ldots)^{1^2} \ldots$


§11. Log-Links and Log-Shells
[IUTch III, Def 1.1]
tautological log-link
log-shell
Olde Trip
JOIN THE CRUSADE FOR REAL ALE

$\underline{\log}({}^{\dagger}\mathfrak{F}) := \{\underline{\log}({}^{\dagger}\mathcal{F}_{\underline{v}}) := \hat{\mathcal{I}}_{{}^{\dagger}\mathcal{F}_{\underline{v}}}\}_{\underline{v} \in \underline{\mathbb{V}}}$

$G_{\underline{v}}({}^{\dagger}\Pi_{\underline{v}})$ if $\underline{v}$: non-arch.

$${}^{\dagger}\mathfrak{F} \xrightarrow{\log} \underline{\log}({}^{\dagger}\mathfrak{F}) \rightsquigarrow \{{}^{\dagger}\mathcal{F}_{\underline{v}} \xrightarrow{\log} \underline{\log}({}^{\dagger}\mathcal{F}_{\underline{v}})\}_{\underline{v} \in \underline{\mathbb{V}}}$$

tant. log-link

$$\underline{\log}({}^{\dagger}\mathfrak{F}) \underset{(\mathrm{poly})}{\xrightarrow{\sim}} {}^{\ddagger}\mathfrak{F})$$

$\rightsquigarrow {}^{\dagger}\mathfrak{F} \xrightarrow{\log} {}^{\ddagger}\mathfrak{F}$ log-link

full

full log-link

$\hat{\mathcal{I}}_{{}^{\dagger}\mathcal{F}_{\underline{v}}} \subseteq \underline{\log}({}^{\dagger}\mathcal{F}_{\underline{v}})$

$G_{\underline{v}}({}^{\dagger}\Pi_{\underline{v}})$

$\| \qquad \|$

$\ddot{\mathcal{I}}_{{}^{\dagger}\mathcal{F}_{\underline{v}}^{\vdash \times \mu}} \subseteq \underline{\ddot{\log}}({}^{\dagger}\mathcal{F}_{\underline{v}}^{\vdash \times \mu})$

$\mathcal{I}_{{}^{\dagger}\mathfrak{F}^{(\vdash \times \mu)}} := \{\mathcal{I}_{{}^{\dagger}\mathcal{F}^{(\vdash \times \mu)}}\}_{\underline{v} \in \underline{\mathbb{V}}}$

$\underline{\log}({}^{\dagger}\mathfrak{F}^{(\vdash \times \mu)}) := \{\underline{\log}({}^{\dagger}\mathfrak{F}^{(\vdash \times \mu)})\}_{\underline{v} \in \underline{\mathbb{V}}}$

${}^{\dagger}\mathfrak{F} \xrightarrow{\log} {}^{\ddagger}\mathfrak{F}$

$\rightsquigarrow {}^{\dagger}\mathcal{F}) \underset{(\mathrm{poly})}{\xrightarrow{\sim}} {}^{\ddagger}\mathcal{F}) \rightsquigarrow {}^{\dagger}\mathcal{F})^{\vdash} \underset{(\mathrm{poly})}{\xrightarrow{\sim}} {}^{\ddagger}\mathcal{F})^{\vdash}$

${}^{\ddagger}\Pi \;\; \| \;\; {}^{\dagger}\Pi \qquad \cap$

$A \overset{\log}{\rightarrow} \log(A)$

$\rightsquigarrow \mu^{\log}(A) = \mu^{\log}(\log(A))$

($\rightsquigarrow$ log-Kummer compatible log-vol.)

$\log^{\dagger} \mathcal{O}^{\times \mu}$, $(\log \mathcal{O})^{\times \mu}$

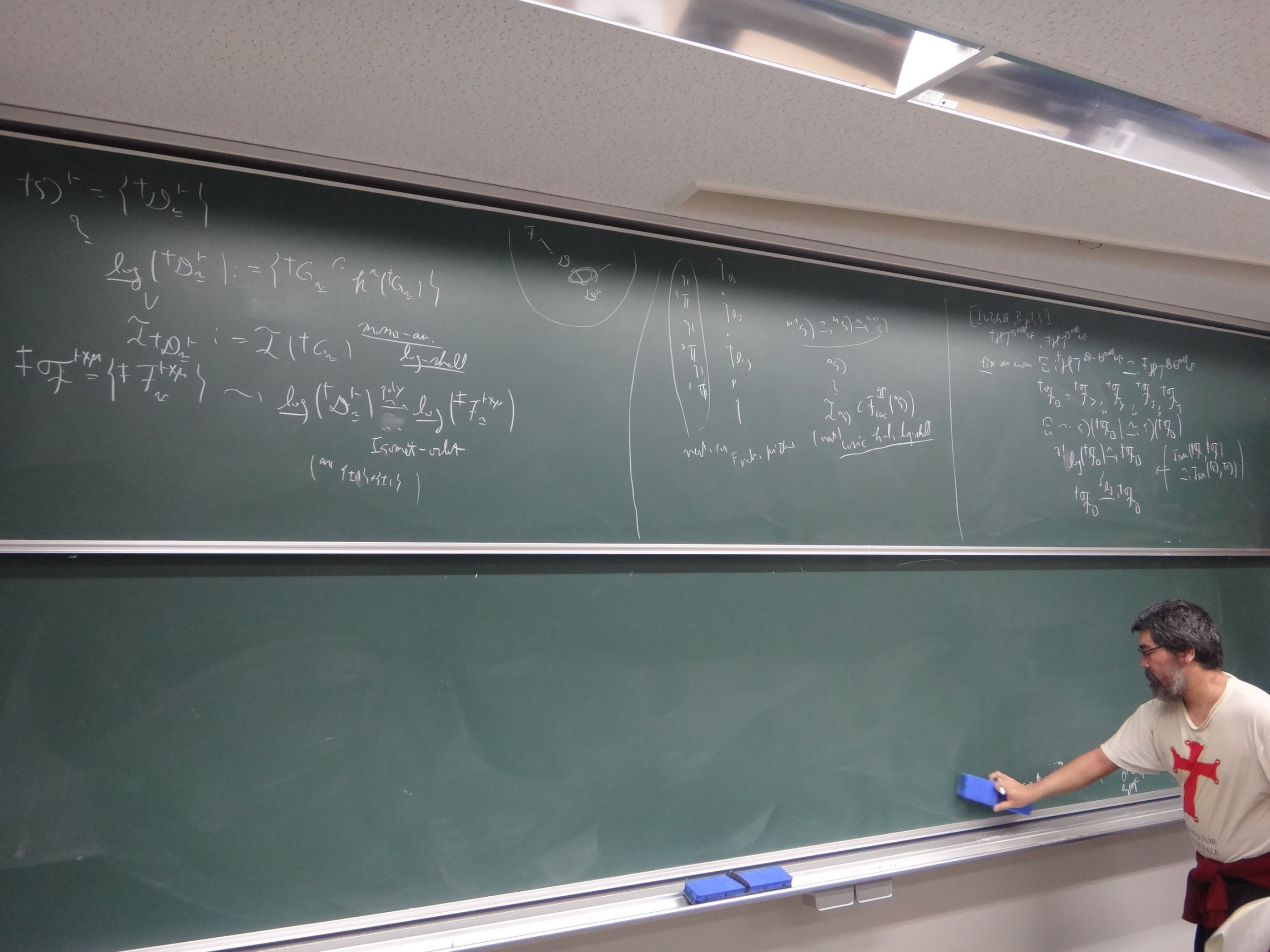
$\overline{\mathcal{F}}_{\mathrm{cns}}({}^{\dagger}\mathfrak{F}) \underset{\mathrm{Kmm}}{\xrightarrow{\sim}} \overline{\mathcal{F}}_{\mathrm{cns}}({}^{\dagger}\mathcal{F})$ later replaced by

Frob.

<u>not</u> compat w/ log-link ($\rightsquigarrow$ upper semi-compat.

$\mathcal{O}^{\times} \subset \frac{1}{2p}\log(\mathcal{O}^{\times})$

$\log(\mathcal{O}^{\times})$


mono-an.
log-shell
poly
Isomet-orbit
fix an isom

Ismet-orbit

(an $\{\pm 1\} \times \{\pm 1\}$)

vert. cum Frob. picture

$\mathcal{L}og(\ldots(\mathbb{S}))$

(vert.) conic holo. log-shell

$\mathbb{D} = \{>, \succ, \mathbb{J}, \mp\}$

collection

$^{\dagger}\mathcal{HT}^{\Theta^{\pm ell}\mathrm{NF}} \xrightarrow{\log} {}^{\ddagger}\mathcal{HT}^{\Theta^{\pm ell}\mathrm{NF}}$

$\Xi \rightsquigarrow$ poly, full poly

log-link   full log-link

gl. ±-synchr.

$^{n-1}\mathcal{HT}^{\Theta^{\pm ell}\mathrm{NF}} \xrightarrow{\log} {}^{n}\mathcal{HT}^{\Theta^{\pm ell}\mathrm{NF}} \xrightarrow{\log} {}^{n+1}\mathcal{HT}^{\Theta^{\pm ell}\mathrm{NF}}$

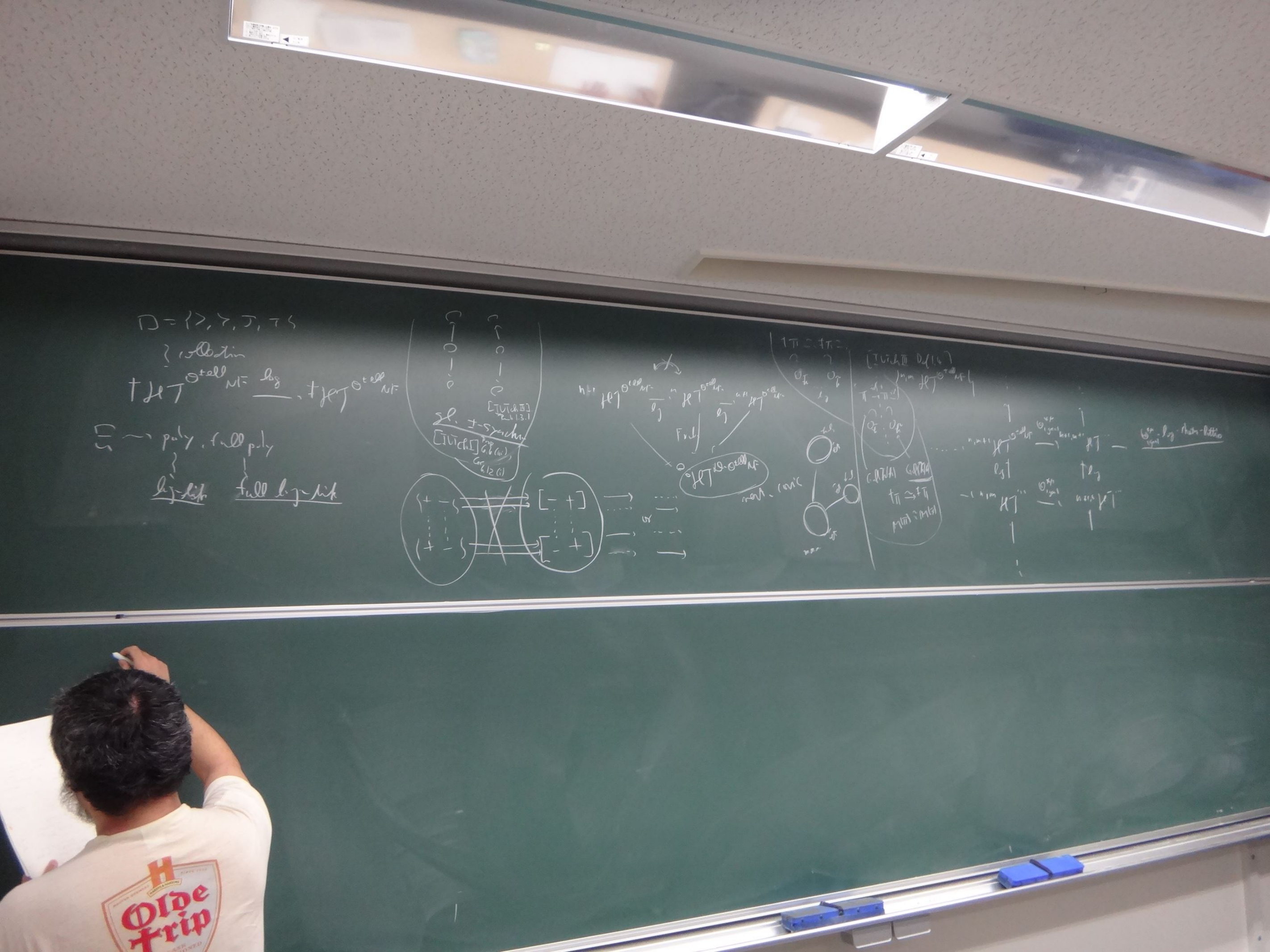
Frob.

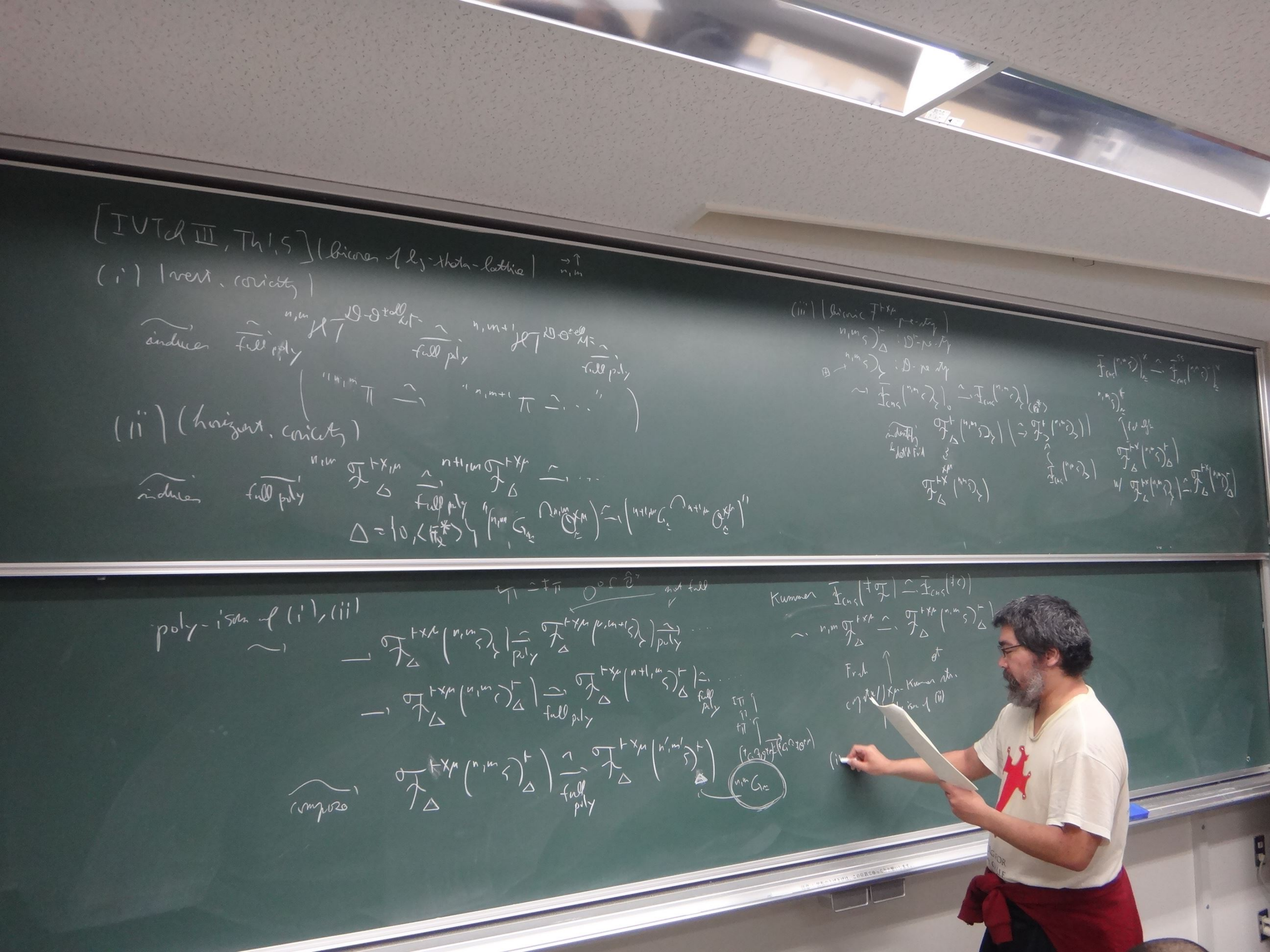
${}^{\circ}\mathcal{HT}^{\mathbb{D}\text{-}\Theta^{\pm ell}\mathrm{NF}}$

vert. conic

[IUTch III Def 1.4]

$\{{}^{n,m}\mathcal{HT}^{\Theta^{\pm ell}\mathrm{NF}}\}$


poly, full poly
full log-link
[IUTchIII] Def 1.6
[IUTchIII]
Frob
Olde Trip


[IUTch III, Th 1.5]
(i) (vert. coricity)
(ii) (horizont. coricity)
induces
full poly
poly-isom of (i), (ii)
compose
not full
Kummer

poly-isom of (i), (ii)

$\leadsto$

${}^{\dagger}\Pi \cong {}^{\ddagger}\Pi$ $\quad \mathcal{O}^{\circ} \curvearrowright \mathcal{E}$ $\quad$ not full

$\rightarrow \mathcal{F}^{\vdash \times \mu}_{\triangle}({}^{n,m}\mathfrak{S})_t \, \big| \xrightarrow[\text{poly}]{\sim} \mathcal{F}^{\vdash \times \mu}_{\triangle}({}^{n,m+1}\mathfrak{S})_t \, \big| \xrightarrow[\text{poly}]{\sim} \cdots$

$\rightarrow \mathcal{F}^{\vdash \times \mu}_{\triangle}({}^{n,m}\mathfrak{S})^{\vdash}_{\triangle} \, \big| \xrightarrow[\text{full poly}]{\sim} \mathcal{F}^{\vdash \times \mu}_{\triangle}({}^{n+1,m}\mathfrak{S})^{\vdash}_{\triangle} \, \big| \xrightarrow[\text{full poly}]{\sim} \cdots$

$\overbrace{\text{compose}} \quad \mathcal{F}^{\vdash \times \mu}_{\triangle}({}^{n,m}\mathfrak{S})^{\vdash}_{\triangle} \, \big| \xrightarrow[\text{full poly}]{\sim} \mathcal{F}^{\vdash \times \mu}_{\triangle}({}^{n',m'}\mathfrak{S})^{\vdash}_{\triangle} \, \big|$

${}^{\dagger}\Pi \curvearrowright$

$\wr\wr$

${}^{\ddagger}\Pi \curvearrowright$

$({}^{\dagger}G \curvearrowright {}^{\dagger}\mathcal{O}^{\times \mu}) \xrightarrow{\sim} ({}^{\ddagger}G \curvearrowright {}^{\ddagger}\mathcal{O}^{\times \mu})$

${}^{n,m}G_{\infty}$

Kummer $\Psi_{\text{cns}}({}^{n,m}\mathcal{F}) \xrightarrow{\sim} \Psi_{\text{cns}}({}^{n,m}\mathfrak{S})$

$\leadsto {}^{n,m}\mathcal{F}^{\vdash \times \mu}_{\triangle} \xrightarrow{\sim} \mathcal{F}^{\vdash \times \mu}_{\triangle}({}^{n,m}\mathfrak{S})^{\vdash}_{\triangle}$

Frob $\quad$ ét

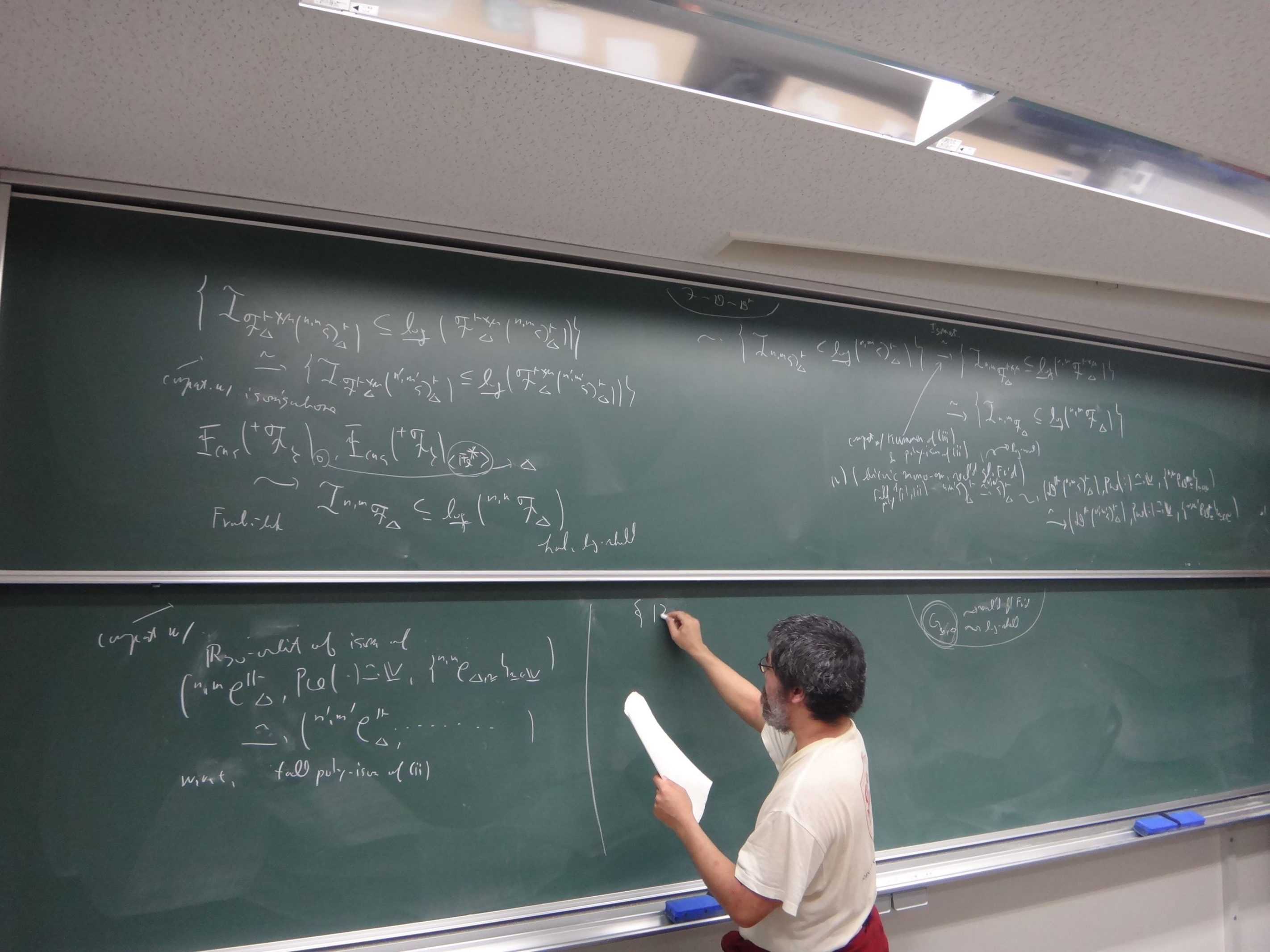
compat'l $\Big|$ $\times\mu$-Kummer str.
poly isom of (ii)

(iv) (bi-coric mono-an. log-shells)

full poly of (iii) $\leadsto \{ \mathcal{I}_{{}^{n,m}\mathfrak{S}^{\vdash}_{\triangle}} \subseteq \underline{\log}({}^{n,m}\mathfrak{S})^{\vdash}_{\triangle} \} \xrightarrow[\sim]{\text{full poly}} \{ \mathcal{I}_{{}^{n',m'}\mathfrak{S}^{\vdash}_{\triangle}} \subseteq \log({}^{n',m'}\mathfrak{S})^{\vdash}_{\triangle} \}$

ét, mono-an

$\mathcal{F}^{\vdash \times \mu}({}^{n,}$


compat. w/ isomorphisms
Frob.-like
holo. log-shell
compat. w/ Kummer of (iii) & poly-isom of (ii)
compat. w/
w.r.t. full poly-isom of (ii)

...ect w/

$\mathbb{R}_{>0}$-mult of isom of

$\left({}^{n,m}\mathcal{e}^{\Vdash}_{\triangle},\ \mathrm{Prl}(-) \overset{\sim}{\to} \underline{\mathbb{V}},\ \{{}^{n,m}\mathcal{e}_{\triangle, \underline{v}}\}_{\underline{v} \in \underline{\mathbb{V}}} \right)$

$\overset{\sim}{\longrightarrow} \left({}^{n',m'}\mathcal{e}^{\Vdash}_{\triangle}, \cdots\cdots \right)$

w.r.t. full poly-isom of (ii)

§12. Final Multiradial Representation

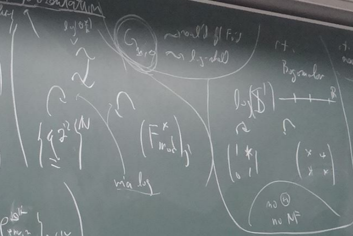
[IUTch III, Prop 2.1] + $\{{}^{n,m}\mathcal{HT}^{\Theta ell}_{NF}\}$ + $\mathcal{HT}^{\Theta ell}_{NF}$

(vert. coricity & Kummer theory of Θ-monoid)

(i') (vert. coric Θ-monoids

$\dagger\mathfrak{C}_{>} \xleftarrow{\text{Frob-like}} (\mathrm{Ind}) \mathcal{F}_{env}(\dagger\mathfrak{S}_{>})$

$\dagger\mathfrak{C}_{>}^{\Vdash} \xleftarrow{\text{Frob-like}} (\mathfrak{D}^{\Vdash}_{env}(\dagger\mathfrak{S})^{\vdash}_{>},\ \mathrm{Prl}(-) \overset{\sim}{\to} \underline{\mathbb{V}},\ \{\mathcal{e}^{\mathfrak{D}\Vdash}_{env, \underline{v}}\}_{\underline{v} \in \underline{\mathbb{V}}})$



$\uparrow$ fine full-poly

$(\mathrm{Ind})\mathcal{F}_{env}({}^{n,m}\mathfrak{S}_{>}) \overset{\sim}{\to} \mathcal{F}({}^{n,m+1}\mathfrak{S}_{>})$

$\mathfrak{D}^{\Vdash}_{env}({}^{n,m}\mathfrak{S}_{>}) \overset{\sim}{\to} \mathfrak{D}^{\Vdash}_{env}({}^{n,m+1}\mathfrak{S}_{>}^{\vdash})$

...

(ii) (Kummer isom's)

(ii) (Kummer isom's)

$$^{\dagger}\mathcal{HT}^{\Theta^{\pm ell}NF} \longmapsto {}^{(\omega)}\underline{\underline{\mathcal{F}}}_{env}({}^{\dagger}\mathcal{HT}^{\Theta}),$$

$$\mathcal{C}^{\Vdash}_{env}({}^{\dagger}\mathcal{HT}^{\Theta})$$

$$\mathrm{Prb}(\mathcal{C}^{\Vdash}_{env}({}^{\dagger}\mathcal{HT}^{\Theta})) \xrightarrow{\sim} \underline{\mathbb{V}},$$

$$\{\wp\} \xrightarrow{\sim} \ldots$$

& Kummer isom's

$$^{(\omega)}\underline{\underline{\mathcal{F}}}_{env}({}^{\dagger}\mathcal{HT}^{\Theta}) \xrightarrow[\sim]{\text{Frob}} {}^{(\omega)}\underline{\underline{\mathcal{F}}}_{env}({}^{\dagger}\mathfrak{G}_{v})$$

$$\mathcal{C}^{\Vdash}_{env}({}^{\dagger}\mathcal{HT}^{\Theta}) \xrightarrow{\sim} \mathcal{C}^{\Vdash}_{env}({}^{\dagger}\mathfrak{G}_{v})^{k}$$

compat w/ $\mathrm{Prb} \xrightarrow{\sim} \underline{\mathbb{V}}$ & glob. loc.

$$\mathfrak{F}^{\vdash}_{env}({}^{\dagger}\mathfrak{G}_{v})$$

$$\mathfrak{F}^{\Vdash}_{env}({}^{\dagger}\mathfrak{G}_{v})$$

Kummer $\rightsquigarrow$
$$\left\{\begin{array}{l} {}^{\dagger}\mathfrak{F}^{\vdash}_{env} \xrightarrow[\sim]{\text{Frob}} \mathfrak{F}^{\vdash}_{env}({}^{\dagger}\mathfrak{G}_{v}) \\ {}^{\dagger}\mathfrak{F}^{\Vdash}_{env} \xrightarrow{\sim} \mathfrak{F}^{\Vdash}_{env}({}^{\dagger}\mathfrak{G}_{v}) \end{array}\right.$$

(iii) (Kummer theory at bad primes)

$v \in \underline{\mathbb{V}}^{bad}$

$$\underline{\underline{M}}^{\Theta}_{*}({}^{\dagger}\mathcal{D}_{v,\geq}) \xrightarrow{\sim} \underline{\underline{M}}^{\Theta}_{*}({}^{\dagger}\mathfrak{G}_{v})$$

$$\Pi_{v}(\underline{\underline{M}}^{\Theta}_{*}({}^{\dagger}\mathcal{D}_{v,\geq})) \xrightarrow{\sim} \Pi_{v}(\underline{\underline{M}}^{\Theta}({}^{\dagger}\mathfrak{G}_{v}))$$

$$\subset \underline{\underline{\mathcal{F}}}_{{}^{\dagger}\mathcal{HT}^{\Theta}} \to \underline{\underline{\mathcal{F}}}^{\Vdash}_{\mathfrak{F}_{v}}$$

(iv),(v): omit

(vi) (... const. monoids)

(vii) (compat. w/ const. monoids)

unit portion of the theta monoids

$$\rightsquigarrow \begin{cases} {}^{\dagger}\mathcal{F}_{\triangle}^{\vdash\times} \xrightarrow{\sim} {}^{\dagger}\mathcal{F}_{\mathrm{env}}^{\vdash\times} & \text{Frob} \\ \mathcal{F}_{\triangle}^{\vdash\times}({}^{\dagger}\mathfrak{S})^{\vdash}_{\triangle}) \xrightarrow{\sim} \mathcal{F}_{\mathrm{env}}^{\vdash\times}({}^{\dagger}\mathfrak{S})_{>}) & \text{ét} \end{cases}$$

$(\ )^{\times\mu}$ Kummer compat'

$${}^{\dagger}\mathcal{F}_{\mathrm{env}}^{\vdash\times\mu} \xrightarrow{\sim} \mathcal{F}_{\mathrm{env}}^{\vdash\times\mu}({}^{\dagger}\mathfrak{S})_{>})$$

$\triangle$ Frob $\triangle$ ét

[IUTchIII, Th 2.2] (Kummer compat. multirad. of theta monoids)

(ii) (Kummer aspects of multiradiality at bad primes)

ét $\quad {}_{\infty}\Psi_{\mathrm{env}}({}^{\dagger}\mathfrak{S})_{>})_{v} \supset {}_{\infty}\Psi^{\perp}_{\mathrm{env}}({}^{\dagger}\mathfrak{S})_{>})_{v} := \langle {}_{\infty}\theta^{\iota}_{\mathrm{env}}(\mathbb{M}^{\Theta}_{*}({}^{\dagger}\mathcal{D}_{>,v})), (\omega) \rangle$

Frob $\quad {}_{\infty}\Psi_{\mathcal{F}_{\mathrm{env}}}({}^{\dagger}\mathcal{HT}^{\Theta})_{v} \supset {}_{\infty}\Psi^{\perp}_{\mathcal{F}_{\mathrm{env}}}({}^{\dagger}\mathcal{HT}^{\Theta})_{v} := \langle {}_{\infty}\theta^{\iota}_{\mathrm{env}}(\mathbb{M}^{\Theta}_{*}({}^{\dagger}\mathcal{F}_{>,v})), (\omega) \rangle$

$${}_{\infty}\Psi^{\perp}_{\mathcal{F}_{\mathrm{env}}}({}^{\dagger}\mathcal{HT}^{\Theta})^{\mu}_{v} \supset {}_{\infty}\Psi_{\mathcal{F}_{\mathrm{env}}}({}^{\dagger}\mathcal{HT}^{\Theta})^{\mu}_{v} \subset {}_{\infty}\Psi_{\mathcal{F}_{\mathrm{env}}}({}^{\dagger}\mathcal{HT}^{\Theta})^{\times}_{v} \twoheadrightarrow {}_{\infty}\Psi_{\mathcal{F}_{\mathrm{env}}}({}^{\dagger}\mathcal{HT}^{\Theta})^{\times\mu}_{v} \xrightarrow{\sim} \Psi^{ss}_{\mathrm{cns}}({}^{\dagger}\mathcal{F}_{\triangle})^{\times\mu}_{v}$$

$\wr\|$ Kummer

$${}_{\infty}\Psi^{\perp}_{\mathrm{env}}({}^{\dagger}\mathfrak{S})_{>})_{v} \supset {}_{\infty}\Psi_{\mathrm{env}}({}^{\dagger}\mathfrak{S})_{>})^{\mu}_{v} \subset {}_{\infty}\Psi({}^{\dagger}\mathfrak{S})_{>})^{\times}_{v} \twoheadrightarrow {}_{\infty}\Psi_{\mathrm{env}}({}^{\dagger}\mathfrak{S})_{>})^{\times\mu}_{v} \xrightarrow[\mathrm{poly}]{\sim} \Psi^{ss}_{\mathrm{cns}}({}^{\dagger}\mathfrak{S})^{\vdash}_{\triangle})^{\times\mu}_{v}$$

$$\Pi_{\underline{v}}(\mathbb{M}^{\Theta}_{*}({}^{\dagger}\mathcal{D}_{>,v})) \to G_{\underline{v}}(\mathbb{M}^{\Theta}_{*}({}^{\dagger}\mathcal{D}_{>,v})) \xrightarrow[\mathrm{poly}]{\sim} G_{\underline{v}}(\mathbb{M}^{\Theta}_{*}({}^{\dagger}\mathcal{D}_{>,v}))$$

$\hat{\mathbb{Z}}$-orbit

(ii) (Kummer isom's)

$${}^{\dagger}\mathcal{HT}^{\Theta^{\pm\mathrm{ell}}\mathrm{NF}} \longmapsto {}_{(\infty)}\Psi_{\mathcal{F}_{\mathrm{env}}}({}^{\dagger}\mathcal{HT}^{\Theta}),$$

$$\mathcal{E}^{\Vdash}_{\mathrm{env}}({}^{\dagger}\mathcal{HT}^{\Theta})$$

$$\mathrm{Prl}(\mathcal{E}^{\Vdash}_{\mathrm{env}}({}^{\dagger}\mathcal{HT}^{\Theta})) \xrightarrow{\sim} \mathbb{V},$$

$$\mathrm{Prl}\ \xrightarrow{\sim} \mathfrak{S}$$

Frob ét

$${}_{\infty}\Psi_{\mathcal{F}_{\mathrm{env}}}({}^{\dagger}\mathcal{HT}^{\Theta}) \xrightarrow{\sim} {}_{(\infty)}\Psi_{\mathrm{env}}({}^{\dagger}\mathfrak{S})_{>})$$

& Kummer isom's

$${}_{(\infty)}\Psi_{\mathcal{F}_{\mathrm{env}}}({}^{\dagger}\mathcal{HT}^{\Theta}) \xrightarrow{\sim} \mathcal{E}^{\Vdash}_{\mathrm{env}}({}^{\dagger}\mathfrak{S})_{>})^{\kappa}$$

$$\mathcal{E}^{\Vdash}({}^{\dagger}\mathcal{HT}^{\Theta}) \xrightarrow{\sim} \mathcal{E}^{\Vdash}_{\mathrm{env}}({}^{\dagger}\mathfrak{S})_{>})$$

$$\mathcal{F}^{\vdash}_{\mathrm{env}}({}^{\dagger}\mathfrak{S})_{>})$$

$$\mathcal{F}^{\Vdash}_{\mathrm{env}}({}^{\dagger}\mathfrak{S})_{>})$$

Frob ét

$$\text{Kummer} \rightsquigarrow \begin{cases} {}^{\dagger}\mathcal{F}^{\vdash}_{\mathrm{env}} \xrightarrow{\sim} \mathcal{F}^{\vdash}_{\mathrm{env}}({}^{\dagger}\mathfrak{S})_{>}) \\ {}^{\dagger}\mathcal{F}^{\Vdash}_{\mathrm{env}} \xrightarrow{\sim} \mathcal{F}^{\Vdash}_{\mathrm{env}}({}^{\dagger}\mathfrak{S})_{>}) \end{cases}$$

(iii) (Kummer theory at bad primes)

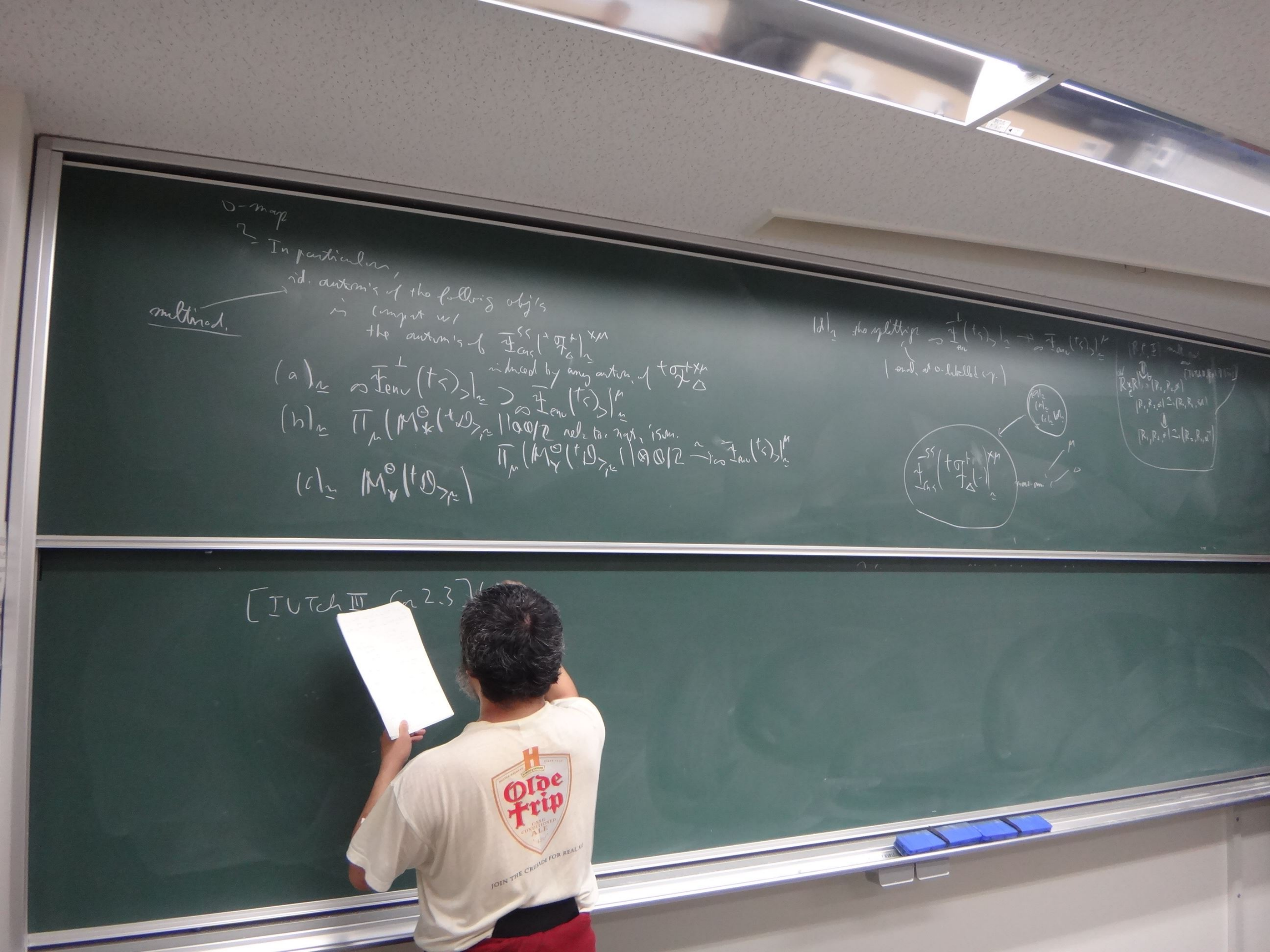
$\underline{v} \in \underline{\mathbb{V}}^{\mathrm{bad}}$

$$\mathbb{M}^{\Theta}_{*}({}^{\dagger}\mathcal{D}_{>,v}) \xrightarrow[\mathrm{poly}]{\sim} \mathbb{M}^{\Theta}_{*}(\underline{\mathbb{F}}_{\underline{v}})$$

$$\Pi_{\underline{v}}(\mathbb{M}^{\Theta}_{*}({}^{\dagger}\mathcal{D}_{>,v})) \curvearrowright \mathcal{O}^{\triangleright} \xrightarrow{\sim} \Pi_{\underline{v}}(\mathbb{M}^{\Theta}(\underline{\mathbb{F}}_{\underline{v}}))$$

$$\subset \Psi_{\mathcal{F}^{\Theta}_{v}} \to \Psi^{\mathrm{ss}}_{\mathcal{F}_{v}}$$

(iv), (v): omit


Θ-map
In particular,
id. autom's of the following obj's
is compat w/
the autom's of
multirad.
induced by any autom. of
(a)
(b)
(c)
(d)
the splittings
[IUTch III Cor 2.3]
Olde Trip
CASK CONDITIONED ALE
JOIN THE CRUSADE FOR REAL ALE

[IUTch III, Cor 2.3] (étale picture of multiradial theta monoids)

$\{ {}^{n,m}\mathcal{HT}^{\Theta^{\pm\mathrm{ell}}\mathrm{NF}} \}_{n,m\in\mathbb{Z}}$

$\mathcal{R}$ radial data

Obj: ${}^{\dagger}\mathfrak{R} := \Big({}^{\dagger}\mathcal{HT}^{\mathcal{D}\text{-}\Theta^{\pm\mathrm{ell}}\mathrm{NF}},\ {}^{\sigma}\mathcal{F}^{\Vdash}_{\mathrm{env}}({}^{\dagger}\mathfrak{S})_{>}),\ {}^{\dagger}\mathfrak{R}^{\mathrm{LGP}},\ {}^{\sigma}\mathcal{F}^{\vdash\times\mu}_{\triangle}({}^{\dagger}\mathfrak{S})^{\vdash}_{\triangle}),\ {}^{\sigma}\mathcal{F}^{\times\mu}_{\mathrm{env}}({}^{\dagger}\mathfrak{S})_{>}) \xrightarrow[\sim]{\text{full poly}} {}^{\sigma}\mathcal{F}^{\vdash\times\mu}_{\triangle}({}^{\dagger}\mathfrak{S})^{\vdash}_{\triangle}) \Big)$

$(a)_{\mathcal{R}} \quad (b)_{\mathcal{R}} \quad (c)_{\mathcal{R}} \quad (d)_{\mathcal{R}} \quad (e)_{\mathcal{R}}$

Hom ${}^{\dagger}\mathfrak{R} \xrightarrow{\sim} {}^{\ddagger}\mathfrak{R}$

$(a)_{\mathrm{Mor}}$ ${}^{\dagger}\mathcal{HT}^{\mathcal{D}\text{-}\Theta^{\pm\mathrm{ell}}\mathrm{NF}} \xrightarrow{\sim} {}^{\ddagger}\mathcal{HT}^{\mathcal{D}\text{-}\Theta^{\pm\mathrm{ell}}\mathrm{NF}}$

$(b)_{\mathrm{Mor}}$ ${}^{\sigma}\mathcal{F}^{\Vdash}_{\mathrm{env}}({}^{\dagger}\mathfrak{S})_{>}) \xrightarrow{\sim} {}^{\sigma}\mathcal{F}^{\Vdash}_{\mathrm{env}}({}^{\ddagger}\mathfrak{S})_{>})$ induce

$(c)_{\mathrm{Mor}}$ ${}^{\dagger}\mathfrak{R}^{\mathrm{LGP}} \xrightarrow{\sim} {}^{\ddagger}\mathfrak{R}^{\mathrm{LGP}}$ induce

$(c)_{\mathcal{R}} = \{ (a)_{\underline{v}}, (b)_{\underline{v}}, (c)_{\underline{v}}, (d)_{\underline{v}} \text{ for } \underline{v} \in \underline{\mathbb{V}}^{\mathrm{bad}} \}$

$(d)_{\mathrm{Mor}}$ ${}^{\sigma}\mathcal{F}^{\vdash\times\mu}_{\triangle}({}^{\dagger}\mathfrak{S})^{\vdash}_{\triangle}) \xrightarrow{\sim} {}^{\sigma}\mathcal{F}^{\vdash\times\mu}_{\triangle}({}^{\ddagger}\mathfrak{S})^{\vdash}_{\triangle})$

$(e)_{\mathrm{Mor}}$ compat. w/ $(b)_{\mathrm{Mor}}, (d)_{\mathrm{Mor}}$ automatically

$\mathcal{C}$ coric data

Obj $\big(({}^{\dagger}\mathfrak{S})^{\vdash},\ {}^{\sigma}\mathcal{F}^{\vdash\times\mu}_{\triangle}(({}^{\dagger}\mathfrak{S})^{\vdash}) \big)$

$(a)_{\mathcal{C}} \quad (b)_{\mathcal{C}}$

Mor $(a)_{\mathrm{Mor}}$ $({}^{\dagger}\mathfrak{S})^{\vdash} \xrightarrow{\sim} ({}^{\ddagger}\mathfrak{S})^{\vdash}$ induces

$(b)_{\mathrm{Mor}}$ ${}^{\sigma}\mathcal{F}^{\vdash\times\mu}_{\triangle}(({}^{\dagger}\mathfrak{S})^{\vdash}) \xrightarrow{\sim} {}^{\sigma}\mathcal{F}^{\vdash\times\mu}_{\triangle}(({}^{\ddagger}\mathfrak{S})^{\vdash})$

${}^{\sigma}\mathcal{F}^{\vdash\times\mu}_{\triangle}(({}^{\dagger}\mathfrak{S})^{\vdash})$

rad. alg'm

$${}^{\dagger}\mathfrak{R} = ({}^{\dagger}\mathcal{HT}^{\mathcal{D}\text{-}\Theta^{\pm\mathrm{ell}}\mathrm{NF}}, {}^{\mathcal{D}}\mathcal{F}^{\Vdash}_{\mathrm{env}}({}^{\dagger}\mathfrak{s})_{>}), {}^{\dagger}\mathfrak{R}^{\mathrm{bad}}, {}^{\mathcal{D}}\mathcal{F}^{\vdash\times\mu}_{\Delta}({}^{\dagger}\mathfrak{s})^{\vdash}_{\Delta}), {}^{\mathcal{D}}\mathcal{F}^{\vdash\times\mu}_{\mathrm{env}}({}^{\dagger}\mathfrak{s})_{>} \xrightarrow{\sim} {}^{\mathcal{D}}\mathcal{F}^{\vdash\times\mu}_{\Delta}({}^{\dagger}\mathfrak{s})^{\vdash}_{\Delta})$$

$$\mapsto {}^{\dagger}\mathfrak{C} = (({}^{\dagger}\mathfrak{s})^{\vdash}_{\Delta}, {}^{\mathcal{D}}\mathcal{F}^{\vdash\times\mu}_{\Delta}({}^{\dagger}\mathfrak{s})^{\vdash}_{\Delta}))$$

(i) full & ess. surj;

(ii) ${}^{n,m}\mathcal{HT}^{\mathcal{D}\text{-}\Theta^{\pm\mathrm{ell}}\mathrm{NF}} \rightsquigarrow$ multirad.

$\wr\wr$

${}^{n,m+1}\mathcal{HT}$

$\rightsquigarrow {}^{n,m}\mathfrak{R} \xrightarrow{\sim} {}^{n,m+1}\mathfrak{R} \xrightarrow{\sim} \cdots$

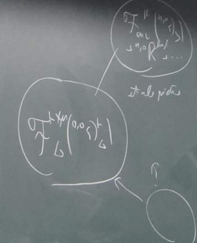
$\rightsquigarrow$ next. conic ${}^{n,\circ}\mathfrak{R}$

$\rightsquigarrow {}^{n,\circ}\mathfrak{C}$

hor. arrow..

$\rightarrow ({}^{n,m}\mathfrak{s})^{\vdash}_{\Delta} \xrightarrow[\text{poly}]{\text{full}} ({}^{n+1,m}\mathfrak{s})^{\vdash}_{\Delta} \xrightarrow[\text{poly}]{\text{full}} \cdots$

identify ${}^{n,\circ}\mathfrak{C}$ $(n \in \mathbb{Z}) \rightsquigarrow {}^{\circ,\circ}\mathfrak{C}$



étale picture

[IUTch III, Prop 2.4]

(i) ${}^{\dagger}\mathcal{D}^{\vdash} = \{{}^{\dagger}\mathcal{F}^{\vdash}_{\underline{v}}\}$

$\underline{v} \in \underline{\mathbb{V}}^{\mathrm{bad}} \rightsquigarrow$ split Frd ${}^{\dagger}\mathcal{F}^{\vdash}_{\underline{v}}$

$\left(\begin{array}{l} \underline{v} \in \underline{\mathbb{V}}^{\mathrm{bad}} \\ \mathcal{O}^{\circ}(-) := \mathcal{O}^{\perp}(-) \end{array}\right)$ $\mathcal{O}^{\perp}(-) \subseteq \mathcal{O}^{\circ}(-)$ $\mathcal{O}^{\circ}(-)$

$\rightsquigarrow {}^{\dagger}\mathcal{D}^{\vdash\perp} := \{{}^{\dagger}\mathcal{F}^{\vdash\perp}_{\underline{v}}\}_{\underline{v}\in\underline{\mathbb{V}}}$ $\mathcal{O}^{\circ} \rightsquigarrow \mathcal{O}^{\perp}$

${}^{\dagger}\mathcal{D}^{\vdash\circledast} := \{{}^{\dagger}\mathcal{F}^{\vdash\circledast}_{\underline{v}}\}_{\underline{v}\in\underline{\mathbb{V}}}$ $\mathcal{O}^{\circ} \rightsquigarrow \mathcal{O}^{\circledast}$

[IUTch III, Cor 2.3] (étale picture of multirad. theta monoids)

$\{{}^{n,m}\mathcal{HT}^{\Theta^{\pm\mathrm{ell}}\mathrm{NF}}\}_{n,m\in\mathbb{Z}}$

$\mathcal{R}$ radial data

obj: ${}^{\dagger}\mathfrak{R} := ({}^{\dagger}\mathcal{HT}^{\mathcal{D}\text{-}\Theta^{\pm\mathrm{ell}}\mathrm{NF}}, {}^{\mathcal{D}}\mathcal{F}^{\Vdash}_{\mathrm{env}}({}^{\dagger}\mathfrak{s})_{>}), {}^{\dagger}\mathfrak{R}^{\mathrm{bad}}, {}^{\mathcal{D}}\mathcal{F}^{\vdash\times\mu}_{\Delta}({}^{\dagger}\mathfrak{s})^{\vdash}_{\Delta}), {}^{\mathcal{D}}\mathcal{F}^{\times\mu}_{\mathrm{env}}({}^{\dagger}\mathfrak{s})_{>} \xrightarrow[\text{poly}]{\text{full}} {}^{\mathcal{D}}\mathcal{F}^{\vdash\times\mu}_{\Delta}({}^{\dagger}\mathfrak{s})^{\vdash}_{\Delta}))$

(a)$_{\mathcal{R}}$ (b)$_{\mathcal{R}}$ (c)$_{\mathcal{R}}$ (d)$_{\mathcal{R}}$ (e)$_{\mathcal{R}}$

(c)$_{\mathcal{R}}$ = $\{(a)_{\underline{v}}, (b)_{\underline{v}}, (c)_{\underline{v}}, (d)_{\underline{v}}$ for $\underline{v} \in \underline{\mathbb{V}}^{\mathrm{bad}}\}$

Hom ${}^{\dagger}\mathfrak{R} \xrightarrow{\sim} {}^{\ddagger}\mathfrak{R}$

(a)$_{\mathrm{Mor}}$ ${}^{\dagger}\mathcal{HT}^{\mathcal{D}\text{-}\Theta^{\pm\mathrm{ell}}\mathrm{NF}} \xrightarrow{\sim} {}^{\ddagger}\mathcal{HT}^{\mathcal{D}\text{-}\Theta^{\pm\mathrm{ell}}\mathrm{NF}}$

(b)$_{\mathrm{Mor}}$ ${}^{\mathcal{D}}\mathcal{F}^{\Vdash}_{\mathrm{env}}({}^{\dagger}\mathfrak{s})_{>}) \xrightarrow{\sim} {}^{\mathcal{D}}\mathcal{F}^{\Vdash}_{\mathrm{env}}({}^{\ddagger}\mathfrak{s})_{>})$ induce

(c)$_{\mathrm{Mor}}$ ${}^{\dagger}\mathfrak{R}^{\mathrm{bad}} \xrightarrow{\sim} {}^{\ddagger}\mathfrak{R}^{\mathrm{bad}}$ induce

(d)$_{\mathrm{Mor}}$ ${}^{\mathcal{D}}\mathcal{F}^{\vdash\times\mu}_{\Delta}({}^{\dagger}\mathfrak{s})^{\vdash}_{\Delta}) \xrightarrow{\sim} {}^{\mathcal{D}}\mathcal{F}^{\vdash\times\mu}_{\Delta}({}^{\ddagger}\mathfrak{s})^{\vdash}_{\Delta})$

((e)$_{\mathrm{Mor}}$ compat'l (b)$_{\mathrm{Mor}}$, (d)$_{\mathrm{Mor}}$ automatically)

$\mathcal{C}$ conic data

obj $(({}^{\dagger}\mathfrak{s})^{\vdash}, {}^{\mathcal{D}}\mathcal{F}^{\vdash\times\mu}_{\Delta}({}^{\dagger}\mathfrak{s})^{\vdash}))$

(a)$_{\mathcal{C}}$ (b)$_{\mathcal{C}}$

Mor (a)$_{\mathrm{Mor}\mathcal{C}}$ $({}^{\dagger}\mathfrak{s})^{\vdash} \xrightarrow{\sim} ({}^{\ddagger}\mathfrak{s})^{\vdash}$

(b)$_{\mathrm{Mor}\mathcal{C}}$ ${}^{\mathcal{D}}\mathcal{F}^{\vdash\times\mu}_{\Delta}({}^{\dagger}\mathfrak{s})^{\vdash}) \xrightarrow{\sim} {}^{\mathcal{D}}\mathcal{F}^{\vdash\times\mu}_{\Delta}({}^{\ddagger}\mathfrak{s})^{\vdash})$ induces

$\mathbb{V}_{\mathbb{Q}} := \mathbb{V}(\mathbb{Q})$ [IUTch III, Prp 3.1]

$\{{}^{\alpha}\mathfrak{F}\}_{\alpha \in A}$: n-capsule of $\mathcal{F}$-prime-strips

$$\mathbb{V}_{\mathbb{Q}} \ni v_{\mathbb{Q}} \mapsto \underline{\log}({}^{\alpha}\mathcal{F}_{v_{\mathbb{Q}}}) := \bigoplus_{\underline{v} \mid v_{\mathbb{Q}}} \underline{\log}({}^{\alpha}\mathcal{F}_{\underline{v}})$$

$$\underline{\log}({}^{A}\mathcal{F}_{v_{\mathbb{Q}}}) := \bigotimes_{\alpha \in A} \underline{\log}({}^{\alpha}\mathcal{F}_{v_{\mathbb{Q}}})$$

(1-) tensor packet

(n-) tensor packet

tensor as inductive limit of top. modules

$$\underline{\log}({}^{A,\alpha}\mathcal{F}_{\underline{v}}) := \underline{\log}({}^{\alpha}\mathcal{F}_{\underline{v}}) \otimes \Big\{ \bigotimes_{\beta \in A \setminus \{\alpha\}} \underline{\log}({}^{\beta}\mathcal{F}_{v_{\mathbb{Q}}}) \Big\} \subseteq \underline{\log}({}^{A}\mathcal{F}_{v_{\mathbb{Q}}})$$

$\underline{\log}({}^{\alpha}\mathcal{F}_{\underline{v}})$: 1's at $\beta \in A \setminus \{\alpha\}$

normalized weight

$$\times \frac{1}{[K_{\underline{v}} : (F_{\mathrm{mod}})_{v}]}$$

0

.....

[IUTch III, Prp 3.2]

$$\mathbb{V}_{\mathbb{Q}} \ni v_{\mathbb{Q}} \mapsto \underline{\log}({}^{\alpha}\mathcal{D}^{\vdash}_{v_{\mathbb{Q}}}) := \bigoplus_{\underline{v} \mid v_{\mathbb{Q}}} \underline{\log}({}^{\alpha}\mathcal{D}^{\vdash}_{\underline{v}})$$

$$\underline{\log}({}^{A}\mathcal{D}^{\vdash}_{v_{\mathbb{Q}}}) := \bigotimes_{\alpha \in A} \underline{\log}({}^{\alpha}\mathcal{D}^{\vdash}_{v_{\mathbb{Q}}})$$

(1-) tensor packet

$$\cup$$

$$\underline{\log}({}^{A,\alpha}\mathcal{D}^{\vdash}_{v_{\mathbb{Q}}}) \qquad \{{}^{\alpha}\mathfrak{D}^{\vdash \times \mu}\}_{\alpha \in A}$$

as well

$\widetilde{\mathcal{I}}({}^{\alpha}\mathcal{D}^{\vdash}_{\underline{v}_\Theta}) \subseteq \underline{\log}({}^{\alpha}\mathcal{D}^{\vdash}_{\underline{v}_\Theta})$

$\widetilde{\mathcal{I}}({}^{A}\mathcal{D}^{\vdash}_{\underline{v}_\Theta}) \subseteq \underline{\log}({}^{A}\mathcal{D}^{\vdash}_{\underline{v}_\Theta})$

$\widetilde{\mathcal{I}}({}^{A,\alpha}\mathcal{D}^{\vdash}_{\underline{v}}) \subseteq \underline{\log}({}^{A,\alpha}\mathcal{D}^{\vdash}_{\underline{v}})$

mono-an. log-shells

$\widetilde{\mathcal{I}}$

$\{\underline{\underline{q}}^{j^2}\} \curvearrowright (F^{\times}_{\mathrm{mod}})_{j}$

${}^{\dagger}\mathcal{HT}^{\Theta^{\pm ell}\mathrm{NF}} \rightsquigarrow {}^{\dagger}\mathcal{HT}^{\Theta\mathrm{NF}}$

$\rightsquigarrow {}^{\dagger}\mathcal{HT}^{\Theta^{\pm ell}}$

$\{{}^{\dagger}\mathfrak{F}_j\}_{j\in J}$

$A \subseteq J$

$\rightsquigarrow \{{}^{\alpha}\mathfrak{F}\}_{\alpha\in A}$

$n := |A|$

n-capsule of $\mathcal{F}$-prime-strips

$\alpha\in A$

$\log$-link ${}^{\alpha\sigma}\mathfrak{F} \xrightarrow{\log} {}^{\dagger\sigma}\mathfrak{F}_\alpha$

${}^{\dagger}\mathcal{D}^{\circledcirc} \underset{\text{Belyi}}{\rightsquigarrow} {}^{\dagger}\overline{M}^{\circledcirc}_{\mathrm{mod}}$

"$F^{\times}_{\mathrm{mod}}$"

$({}^{\dagger}\overline{M}^{\circledcirc}_{\mathrm{mod}})_j$

$({}^{\dagger}\overline{M}^{\circledcirc}_{\mathrm{mod}})_A := \bigotimes_{\alpha\in A} ({}^{\dagger}\overline{M}^{\circledcirc}_{\mathrm{mod}})_\alpha$

tensor as modules

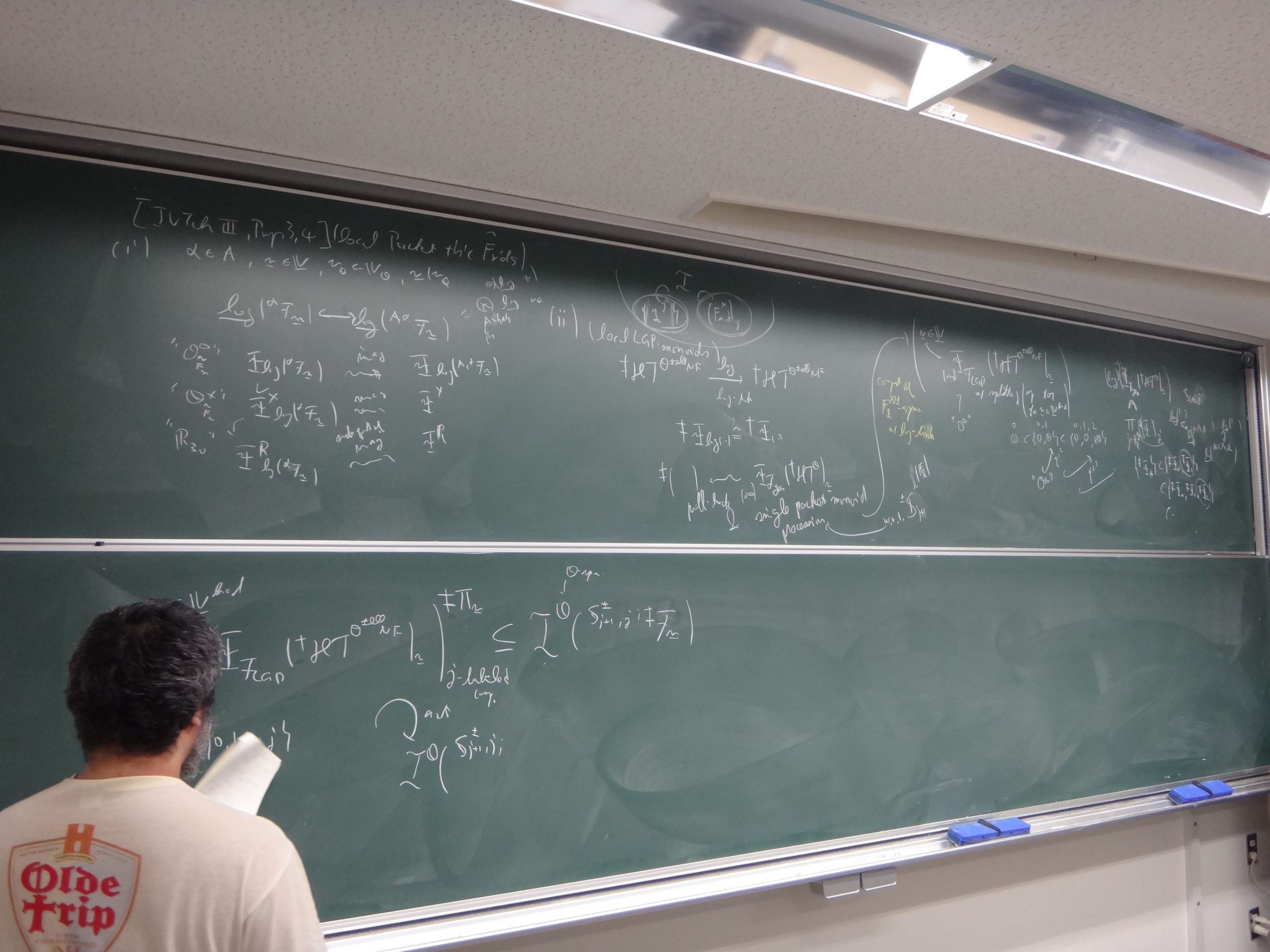
global packet

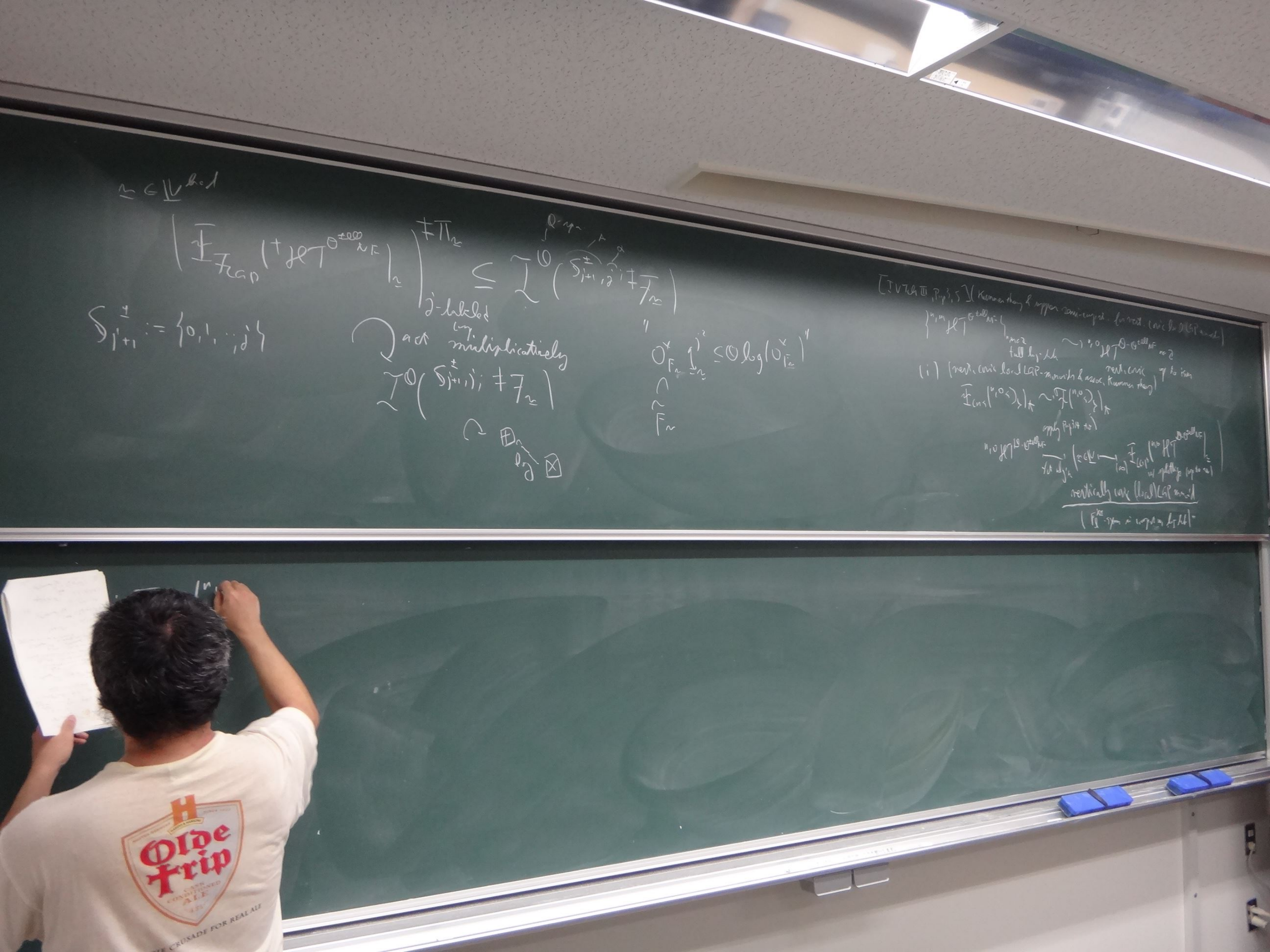
$B(\underline{C}_K)^{\circ}$

$({}^{\dagger}\overline{M}_{\mathrm{mod}})_A \hookrightarrow \underline{\log}({}^{A}\mathcal{I}_{\underline{V}_\Theta}) := \prod_{v\in\underline{V}^{\mathrm{non}}} \underline{\log}({}^{A}\mathcal{I}_{\underline{v}})$

(after taking ... F_{mod} ← ... , ...)

[IUTch III, Prop 3.4] (Local Packet th'c Fr'ds)


(ii) (local LGP-monoids)
single packet monoid
j-labelled



j-labelled
act multiplicatively
vertically coric (local) LGP-monoid
Olde Trip

$\mathrm{Kmm}: \underline{\mathcal{I}}_{\mathrm{cns}}({}^{n,m}{}^{\circ}\mathcal{F}_{\underline{v}})_{*} \xrightarrow{\sim} \underline{\mathcal{I}}_{\mathrm{cns}}({}^{n,\circ}\mathcal{D}_{\underline{v}})_{*}$

Frob. $\quad$ ét

(Prop 3.4) $\quad$ compat. $\quad$ (Prop 3.5)

$\mathrm{Kmm}: {}_{(\infty)}\underline{\mathcal{I}}\mathcal{F}_{\mathrm{LGP}}({}^{n,m}\mathcal{HT}^{\Theta^{\pm\mathrm{ell}}\mathrm{NF}})_{\underline{v}}$

$\xrightarrow{\sim} {}_{(\infty)}\underline{\mathcal{I}}_{\mathrm{LGP}}({}^{n,\circ}\mathcal{HT}^{\mathcal{D}\text{-}\Theta^{\pm\mathrm{ell}}\mathrm{NF}})_{\underline{v}}$

(ii) (upper semi-compat.)

$\leftarrow$ Kummer in (i) is upper semi-compat.

w/ log-links ${}^{n,m-1}\mathcal{HT}^{\Theta^{\pm\mathrm{ell}}\mathrm{NF}} \xrightarrow{\log} {}^{n,m}\mathcal{HT}^{\Theta^{\pm\mathrm{ell}}\mathrm{NF}}$ $(m \in \mathbb{Z})$

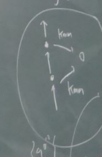
$\mu_{\Theta} \in \mathbb{V}_{\Theta}^{\mathrm{non}}$ $\quad (j \neq 0) \quad \underline{v}/\mu_{\Theta}$

$\mathcal{I}(S^{\pm}_{j+1}\mathcal{F}({}^{n,\circ}\mathcal{D}_{\underline{v}})_{\underline{v}_{\mathbb{Q}}}) \subseteq \mathrm{Kmm}\left(\left(\log\right)^{m'}\left(\bigotimes_{|n|} \underline{\mathcal{I}}_{\mathrm{cns}}({}^{n,m}{}^{\circ}\mathcal{F}_{\underline{v}})_{|t|}\right)^{\times}\right)^{{}^{n,m}\Pi_{\underline{v}}}$

$\forall\, m' \geq 0$

"$\mathcal{O}^{\times}_{\underline{v}} \subset \frac{1}{2p_v}\log(\mathcal{O}^{\times}_{\underline{v}})$"

$\log(\mathcal{O}^{\times}_{\underline{v}}) \subset$



$\{q^{j^2}\}$

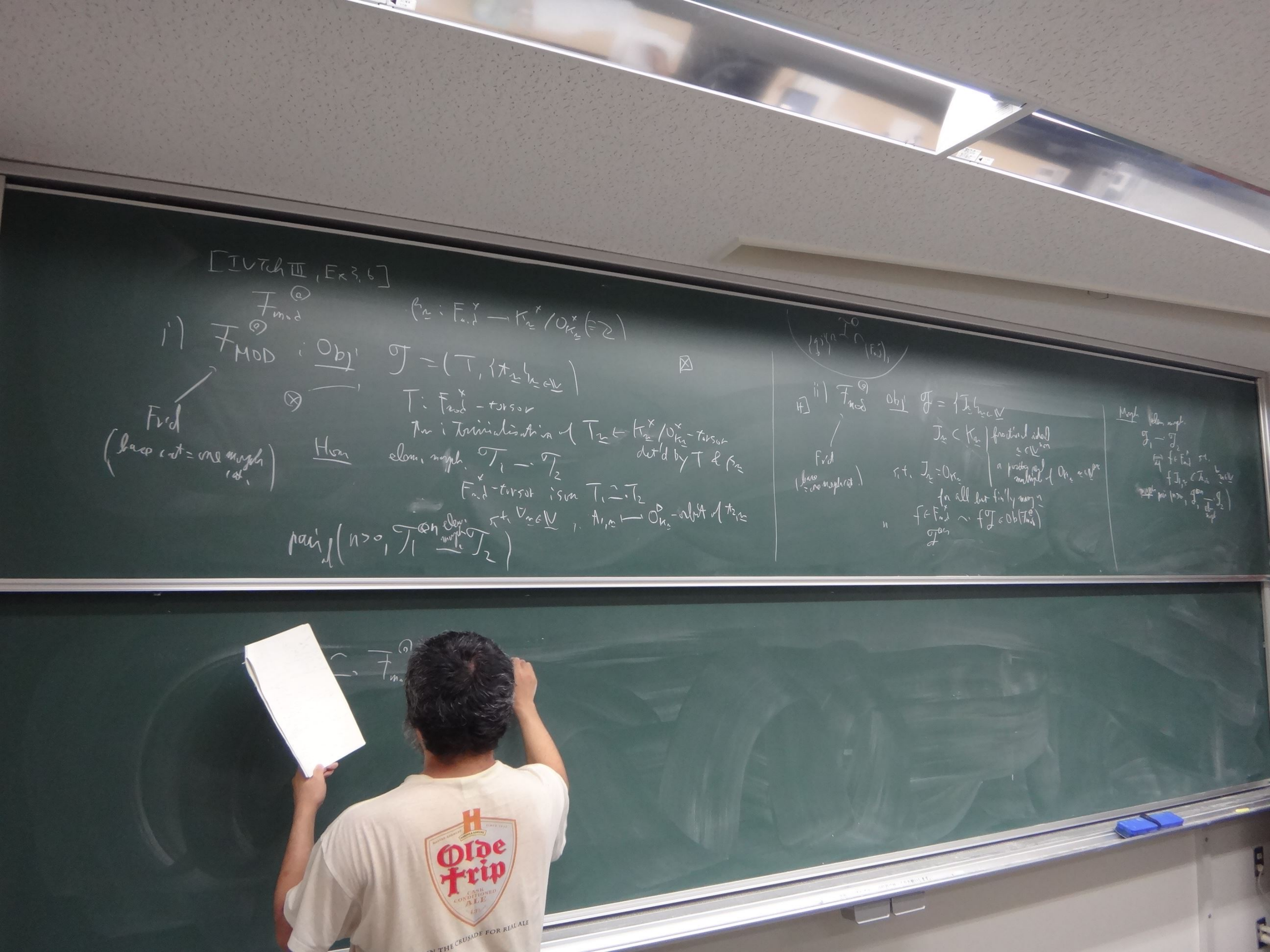
non-interference

$\mathcal{I}^{\mathcal{O}}(S^{\pm}_{j+1}, \mathcal{F}({}^{n,\circ}\mathcal{D}_{\underline{v}})_{\underline{v}_{\mathbb{Q}}})$

$\left(\subseteq \frac{1}{2p}\log(S^{\pm}_{j+1}; \mathcal{F}({}^{n,\circ}\mathcal{D}_{\underline{v}})_{\underline{v}_{\mathbb{Q}}})\right)$

${}_{(\infty)}\underline{\mathcal{I}}_{\mathrm{LGP}}({}^{n,m}\mathcal{HT}^{\Theta^{\pm\mathrm{ell}}\mathrm{NF}})_{\underline{v}}$

through $\mathrm{Kmm} \circ (\log)^{m}$ $\quad m \geq 0$ $\quad$ Totality of these actions



[IUTch III, Ex 3.6]
i) Obj
Hom
elem. morph.
-torsor
trivialisation
det'd by
pair
ii) Obj
Frd
fractional ideal
a positive integral multiple of
for all but fin'ly many
Morph
elem. morph.

$$\overline{\mathcal{F}}^{a}_{\mathrm{mod}} \hookrightarrow \overline{\mathcal{F}}^{n}_{\mathrm{mod}} \hookrightarrow \overline{\mathcal{F}}^{e}_{\mathrm{mod}} \qquad \underline{q}^{j^2}\theta$$

$\boxed{+}$ $\qquad\qquad$ $\boxed{\times}$ $\qquad\qquad$ $\underline{q}\,\theta$

$F^{\times}_{\mathrm{mod}}$ ring str.

upper semi-compat. w/ log-link $\qquad$ str. compat. w/ ⓐ-link $\qquad$ $\mu^{\log}$

suited to estimate $\qquad$ difficult to compute isom $T_1 \xrightarrow{\sim} T_2$

$\forall n \in \mathbb{N}$, $A_{1,n} \longmapsto O^{\triangleright}_{K_n}$-orbit of $A_{2,n}$

Fr'd

(base = one morphism)

$J_n \subset K_n$ fractional ideal

$n \in \mathbb{N}^{\mathrm{fm}}$

s.t. $J_n = O_{K_n}$

a positive real multiple of O_{K_n}, $n \in \mathbb{N}^{\mathrm{arc}}$

for all but fin'ly many n

$f \in F^{\times}_{\mathrm{mod}} \sim fJ \in \mathrm{Ob}(T^{\circ}_{\mathrm{mod}})$

J^{gp}

$q^{j^2}\Theta$

$q\Theta$

$\mu^{\log}$

Θ-link

to compute

Ψ_{cnst}

LCFT

env $\sim$ gau

LGP

$\Theta \sim \log$

$\log(\ ) \sim \log$

$\boxplus$ modules