Our <u>purpose</u> of this exposé (is to give the equivalence):

$$P_{G_\mathcal{O}}(Gr, \mathbb{k}) \xrightarrow{\sim} \mathrm{Rep}\, \check{G}_{\mathbb{k}} \qquad \text{(given by } F \simeq H^* \text{ the global cohomology functor)}.$$

where $P_{G_\mathcal{O}}(Gr, \mathbb{k})$ stands for the Cat. of $G_\mathcal{O}$-equiv. perv. sheaves with $\mathbb{k}$-coefficients on Gr.

<u>Notations</u>: G red. gp / $\mathbb{C}$, $K = \mathbb{C}((t))$, $\mathcal{O} = \mathbb{C}[[t]]$, $Gr = G(K)/G(\mathcal{O})$: an ind-scheme, $G_K \leftrightarrow G(K)$ ind-scheme, $G_\mathcal{O} \leftrightarrow G(\mathcal{O})$: scheme, $\check{G}_{\mathbb{k}}$ the dual gp of $G/\mathbb{k}$, $\mathbb{k}$: Noeth. commutative unitary ring.

<u>Steps</u>:

1. Decomposition of F: $F = \bigoplus F_\nu$.
2. Construct a convolution product "$*$" on $P_{G_\mathcal{O}}(Gr, \mathbb{k})$ s.t. F is a tensor functor.
3. Construct $\tilde{G}$ s.t. $P_{G_\mathcal{O}}(Gr, \mathbb{k}) \xrightarrow{\sim} \mathrm{Rep}\, \tilde{G}$
4. Identify $\tilde{G}$ to $\check{G}_{\mathbb{k}}$

§1.

Fix T a max. torus, $T \subset B$ a Borel.

Consider the left action $G_\mathcal{O} \curvearrowright Gr$, whose orbits can be para. by $X_*(T)$, $\forall \lambda \in X_*(T)$, Gr^λ denotes the $G_\mathcal{O}$-orbit $\leftrightarrow \lambda$.

Let $\mathcal{S}$ denote the stratification induced by $G_\mathcal{O}$-orbits, we have:

$$P_{G_\mathcal{O}}(Gr, \mathbb{k}) \xrightarrow{\sim} P_{\mathcal{S}}(Gr, \mathbb{k})$$

(Rq: $-P_{\mathcal{S}}(Gr, \mathbb{k})$ a full subcat of $D_{\mathcal{S}}(Gr, \mathbb{k})$: the bounded $\mathcal{S}$-constructible derived cat. of $\mathbb{k}$-sheaves.

– why this equiv useful? : $\exists$ cohomological functor:

$$pH^0 : D_{\mathcal{S}}(X, \mathbb{k}) \to P_{\mathcal{S}}(X, \mathbb{k})$$

Where $I_*(\lambda, M) := pH^0 \circ j_!(M[\dim \overset{=d_\lambda}{Gr^\lambda}]) \in P_{G_\mathcal{O}}(X, \mathbb{k})$ (same as $I_!(\lambda, M)$, $I_{!*}(\lambda, M)$), M a fin. gen. $\mathbb{k}$-module. It is useful to construct $\tilde{G}$.)

<u>Notation</u>: N: unip. radical of B. N_K: gp ind-sch. $\leftrightarrow N(K)$, (N_K^-). $N_K \curvearrowright Gr$ (on left). The N_K-orb para by $X_*(T)$. $\begin{cases} S_\nu & \text{denote the } N_K\text{-orb} \leftrightarrow \nu \in X_*(T) \\ T_\nu & \text{" " } N_K^-\text{-orb " "} \end{cases}$, where S_ν (T_ν): ind-var. infinite dim and infinite codim.

$\boxed{\text{Thm 1}}$: $\forall A \in P_{G_\mathcal{O}}(Gr, \mathbb{k})$ $\exists$ can. iso

$$H_c^k(S_\nu, A) \xrightarrow{\sim} H_{T_\nu}^k(Gr, A)$$

both sides vanish for $k \neq 2\rho(\nu)$, (where $\rho = \frac{1}{2}$ sum of positive roots with resp to B).

Let F_ν denote $H_c^k(S_\nu, -)$, $\forall \nu \in X_*(T)$, is exact.

We can have morph. of functors:

$$H_{T_\nu}^{2\rho(\nu)}(Gr, -) \to H^{2\rho(\nu)}(-) \to H_c^{2\rho(\nu)}(S_\nu, -)$$

s.t. the comp. is the can. equiv. in $\boxed{\text{Thm 1}}$. Consider $Gr = \cup T_\nu = \cup S_\nu$, the two filtrations of Gr by $\overline{T_\nu}$'s and $\overline{S_\nu}$'s, both indexed by $X_*(T)$. The equiv. above $\Rightarrow$ The two filtrations of H^* split each other.

$\boxed{\text{Thm 2}}$. $\exists$ a natural equiv. of functors:

$$H^* \cong F = \bigoplus_{\nu \in X_*(T)} H_c^{2\rho(\nu)}(S_\nu, -) : P_{G_O}(Gr, \mathbb{k}) \to \mathrm{Mod}_{\mathbb{k}}.$$

F_ν and this equiv are indep. of the choice of the pair (T, B)

(I will introduce a technique in the proof of Thm1 dimension estimate, which is a crucial fact given by Vilonen & Mirković)

<u>"Pf of Thm1"</u>:

– Upper bound of $H_c^{2\rho(\nu)}(S_\nu, A)$ —— (1)
Lower bound of $H_{T_\nu}^{2\rho(\nu)}(Gr, A)$

– $H_c^{2\rho(\nu)}(S_\nu, A) \xrightarrow{\sim} H_{T_\nu}^{2\rho(\nu)}(Gr, A)$ (equivalence induced from [Braden]). —— (2)

(1): $\forall$ dominant $\eta \in X_*(T)$:

$$\begin{cases} \bullet\ A|_{Gr^\eta} \in D^{\leq -2\rho(\eta)}(Gr, \mathbb{k}), \text{ i.e. in degrees} \leq -\dim(Gr^\eta) \\ \bullet\ H_c^k(S_\nu \cap Gr^\eta, \mathbb{k}) = 0, \text{ for } k > 2\dim(S_\nu \cap Gr^\eta) \end{cases} \quad \text{—— } (*)$$

(Thm 3.2 in M.V) $\hookrightarrow = 2\rho(\nu + \eta)$

$$H_c^*(S_\nu \cap Gr^\eta, A) = H_c^*((S_\nu \cap Gr^\eta) \times_{Gr^\eta} Gr^\eta, A \boxtimes \mathbb{k})$$

$$\left(\begin{matrix}\text{By Künneth formula} \\ + \mathbb{k} \text{ constant on } S_\nu \cap Gr^\eta\end{matrix}\right) = H_c^*(S_\nu \cap Gr^\eta, \mathbb{k}) \otimes H_c^*(Gr^\eta, A)$$

By (*):

$$H_c^k(S_\nu \cap Gr^\eta, A) = 0 \text{ for } k > 2\rho(\nu) = 2\rho(\nu + \eta) + (-2\rho(\eta)).$$

+ Spectral sequence of stratification space $\Rightarrow H_c^k(S_\nu, A) = 0$ for $k > 2\rho(\nu)$ (strat: $\overline{Gr^\eta}$, η dominan[t])

(2): Consider the graph:

$$X_*(T) \overset{f^+}{\underset{f^-}{\rightrightarrows}} \begin{matrix} \cup S_\nu \xrightarrow{g^+} \\ \cup T_\nu \xrightarrow{g^-} \end{matrix} Gr \overset{[Br]}{\Longrightarrow} \underbrace{(f^+)^!(g^+)^* A}_{A^{!*}} \simeq \underbrace{(f^-)^*(g^-)^! A}_{A^{*!}}$$

<u>Fact</u>:

$$A^{!*}_\nu = H_c^*(S_\nu, A) \qquad A^{*!}_\nu = H_{T_\nu}^*(Gr, A) \Rightarrow \text{The equiv.}$$

§2. Convolution product and commutative constraint

<u>Purpose</u>: make $P_{G_O}(Gr, \mathbb{k})$ a tensor cat. and F to be a tensor functor

<u>2.1. Convolution product</u>:

Consider the diagram : (don't clean the graph !!!)

$G_O \times G_O$-action: $(\theta_1, \theta_2) \in G_O \times G_O$, $(k, r) \in G_K \times Gr$, $(\theta_1, \theta_2)(k, r) = (\theta_1 k \theta_2^{-1}, \theta_2 r)$

$$\begin{tikzcd} G_K \times Gr \arrow[r, "q"] \arrow[dr, "p"'] & G_K \times_{G_O} Gr \arrow[r, "m"] & Gr \\ & Gr \times Gr & \end{tikzcd} \qquad \text{——— (g1).}$$

$Gr \times Gr$: $G_O \times G_O$-action

Consider the gp immersions:

$$I : G_O \hookrightarrow G_O \times G_O, \quad \theta \mapsto (\theta, 1). \qquad Im(I) := G_O^{I}$$
$$II : G_O \hookrightarrow G_O \times G_O, \quad \theta \mapsto (1, \theta) \qquad Im(II) := G_O^{II} \Rightarrow G_O^{I} \simeq G_O \times G_O / G_O^{II}$$

G_O^{II}-action on $G_K \times Gr$ is free, $G_K \times_{G_O} Gr$ the quotient of $G_K \times Gr$ by G_O^{II}-action ($\hookrightarrow B_K \cdot G_O = G_K$, the G_O term is unique).

p, q : proj and $G_O \times G_O$-equiv. ($G_O \times G_O$-action on $G_K \times_{G_O} Gr$ is given by $G_O \times G_O \to G_O \times G_O / G_O^{II} \simeq G_O^{I}$-action)

$m := (k, r) \longmapsto k \cdot r$, m : G_O^{I}-equiv

By [Bernstein-Lunts] : $\exists ! \, \widetilde{A} \in P_{G_O^{I}}(G_K \times_{G_O} Gr, \mathbb{k})$ s.t.

$$q^* \widetilde{A} = p^* ({}^pH^0 (A_1 \overset{L}{\boxtimes} A_2)), \quad \text{define } A_1 * A_2 := Rm_* \widetilde{A} \qquad \text{——— (3).}$$

m is a stratified semi-small map with resp. to the G_O^{I}-orbits strat on $G_K \times_{G_O} Gr$ and the G_O-orb strat on Gr $\Rightarrow$

$\boxed{\text{Proposition 3}}$: $A_1 * A_2 \in P_{G_O}(Gr, \mathbb{k})$

By analogue (3) can define $A_1 * A_2 * A_3$ and a can iso. : $(A_1 * A_2) * A_3 \simeq A_1 * A_2 * A_3 \simeq A_1 * (A_2 * A_3)$, which gives the associative constraint of this product (More details, see : Zhu. [C. 1.3] [1.2. 1.5].)

2.2 Commutative constraint :

Why need B-D Grassmannian $\longmapsto$

[Explain without writing notes on blackboard :

Look back to (g1). Let $\Delta : G_O \hookrightarrow G_O \times G_O$ be the diagonal immersion, let G_O^{Δ} denote its image, the natural commutative constraint τ of ${}^pH^0(\_ \boxtimes \_)$ on $P_{G_O}(Gr, \mathbb{k}) \times P_{G_O}(Gr, \mathbb{k})$ is an G_O^{Δ}-equiv. iso, whence $p^* \tau$ a G_O^{Δ}-equiv. iso on $P_{G_O^{\Delta}}(G_K \times Gr, \mathbb{k})$, but $G_K \times_{G_O} Gr$ is the quotient of G_O^{II}-action.

$\Rightarrow$ Couldn't be induced on $(P_{G_O}(Gr, \mathbb{k}), *)$

Beilinson - Drinfeld Grassmannians :

To motivated this Grassmannians, we see an interpretation of affine Grass :

$\forall R$ a k-alg, $\forall x \in |X|$ a smooth clos pt, let Gr_x denote the presheaf:

$$Gr_x(R) = \{(\mathcal{F}, \nu) \mid \mathcal{F} \text{ a } G\text{-torsor on } X_R,\ \nu: \mathcal{F}|_{X_R^*} \cong \mathcal{F}^0|_{X_R^*} \text{ a trivialization}\}$$

where $\mathcal{F}^0$ the trivial torsor. $X_R^* := X_R - \{x\}$.

In fact, Gr is a presheaf defined as:

$$Gr(R) = \{(\mathcal{F}, \mu) \mid \mathcal{F} \text{ a } G\text{-torsor on } X_R,\ \mu: \mathcal{F}|_{D_R^*} \cong \mathcal{F}^0|_{D_R^*} \text{ a trivialisation}\}$$

where $D_R^* := D^* \times \mathrm{Spec}(R)$, $D^* := \mathrm{Spec}(k((t)))$, $D := \mathrm{Spec}(k[[t]])$

$\boxed{\text{Thm of Beauville–Laszlo}}$: $Gr_x \cong Gr$.

We globalize the definition of Gr_x:

- Gr_{X^n} denote the ind-scheme rep. the functor:

$$R \longmapsto \{(x_1, \cdots, x_n) \in X^n(R),\ \mathcal{F} \text{ a } G\text{-torsor on } X_R;\ \nu_{(x_1, \cdots, x_n)}: \mathcal{F}|_{X_R - \cup x_i} \to \mathcal{F}^0|_{X_R - \cup x_i} \text{ a triv}$$

- $\widetilde{Gr_X \times Gr_X}$ denotes the ind-scheme rep the functor:

$$R \longmapsto \{(x_1, x_2) \in X^2(R);\ \mathcal{F}_1, \mathcal{F}_2\ G\text{-torsor on } X_R;\ \nu_i \text{ triv. of } \mathcal{F}_i \text{ on } X_R - x_i,\ i = 1,2;\ \mu_1 \text{ a triv. of } \mathcal{F}_1 \text{ on } (\hat{X}_R)_{x_2}\}$$

(where $(\hat{X}_R)_{x_2}$ the formal neighborhood of x_2 in X_R.)

- $Gr_X \tilde{\times} Gr_X$ denotes the ind-sch ... :

$$R \longmapsto \{(x_1, x_2) \in X^2(R);\ \mathcal{F}_1, \mathcal{F}\ G\text{-torsor on } X_R;\ \nu_1 \text{ a triv of } \mathcal{F}_1 \text{ on } X_R - x_1;\ \eta: \mathcal{F}_1|_{(X_R - x_2)} \cong \mathcal{F}|_{(X_R - x_2)}\}$$

- $G_{X^n, \mathcal{O}}$ a gp-sch ... : (Attention the triv $\mathcal{F}^0|_{\dots} \to \mathcal{F}^0|_{\dots}$)

$$R \longmapsto \{(x_1, \cdots, x_n) \in X^n(R),\ \mu_{(x_1, \cdots, x_n)} \text{ a triv of } \mathcal{F}^0 \text{ on } (\hat{X}_R)_{(x_1 \cup \cdots \cup x_n)}\}$$

We have now:

$$\begin{tikzcd}
 & Gr_X \tilde{\times} Gr_X|_U \arrow[dr, "m"] & & \\
\widetilde{Gr_X \times Gr_X}|_U \arrow[ur, "q"] \arrow[dr, "p"] & & Gr_{X^2}|_U \arrow[r, "\pi"] & X^2 \\
 & Gr_X \times Gr_X|_U \arrow[ur, dashed, "\cong"] & &
\end{tikzcd}$$

$$((x_1, x_2), \mathcal{F}_1, \mathcal{F}_2, \nu_1, \nu_2, \mu_1) \longmapsto ((x_1, x_2), \mathcal{F}_1, \nu_1, \mathcal{F}_1 \cup \mathcal{F}_2, \eta := \mathrm{id} \cup \mu_1 \circ \nu_2^{-1})$$

(by $\nu_2 \circ \mu_1^{-1}$ on $(\hat{X}_R)_{x_2} - x_2$)

$$((x_1, x_2), \mathcal{F}_1, \nu_1, \mathcal{F}_1 \cup \mathcal{F}_2, \eta) \longmapsto ((x_1, x_2), \mathcal{F}, \nu := \nu_1 \circ \eta^{-1}|_{X_R - x_1 \cup x_2})$$

$$((x_1, x_2), \mathcal{F}_1, \mathcal{F}_2, \nu_1, \nu_2, \mu_1) \longmapsto ((x_1, x_2), \mathcal{F}_1, \mathcal{F}_2, \nu_1, \nu_2)$$

For $B_1, B_2 \in P_{G_{X,0}}(Gr_X, k)$, define convolution product by
$$B_1 \underset{X}{*} B_2 = Rm_* \widetilde{B}, \quad \text{where } q^* \widetilde{B} = p^* ({}^pH^0 (B_1 \overset{L}{\boxtimes} B_2))$$

(Explain :

$G_{X,0}$: { 1st action $\curvearrowright \widetilde{Gr_X \times Gr_X}$ altering ν_1
2nd action $\curvearrowright \widetilde{Gr_X \times Gr_X}$ ..... μ_1 and ν_2

Both actions are free $\Rightarrow$ p, q as $G_{X,0}$ torsors, whence $\widetilde{B}$ is well defined

$\exists$ projections $Gr_{X^n} \xrightarrow{\pi} Gr$ (cause $Gr_{X^n} \cong Gr \tilde{\times} X^n$ twisted product) in Zhu)
$\searrow X^n$

$\boxed{\text{Proposition}}$ $\exists$ can. iso : ($\Delta : X \to X \times X = X^2$ diagonal)

$$i : Gr_X \cong Gr_{X^2} \times_{X^2, \Delta} X, \; j : Gr_{X^2}|_{X^2 - \Delta =: U} \cong (Gr_X \times Gr_X)|_{X^2 - \Delta =: U}$$

explain without notes $\to$ (In addition, $\exists S_2$-action on Gr_{X^2} s.t. j is S_2-equiv., where S_2 acts on $Gr_X \times Gr_X$ by permut the two factors. And S_2 commute with the $G_{X,0}$-action on both sides.)

(Go back to the graph, explain the pencil part.)
$$Gr_X \xrightarrow{i} Gr_{X^2} \xleftarrow{j} Gr_X \times Gr_X|_U$$

Consider : { $T^0 := \pi^* [1]$: $P_{G_0}(Gr, k) \to P_{G_{X,0}}(Gr_X, k)$
$i^0 := i^* [-1]$: $P_{G_{X,0}}(Gr_{X^2}, k) \to P_{G_{X,0}}(Gr, k)$

We have :

{ (a) $T^0 A_1 * T^0 A_2 \cong j_{!*} ({}^pH^0 (T^0 A_1 \overset{L}{\boxtimes} T^0 A_2)|_U)$
(b) $T^0 (A_1 * A_2) \cong i^0 (T^0 A_1 \underset{X}{*} T^0 A_2)$ (See Zhu Lemma 5 & 6 for details)

a functorial iso cause induced by functorial iso of $\otimes$ $\longrightarrow$ $\Rightarrow T^0 (A_1 * A_2) \cong T^0 (A_2 * A_1)$ (The commutative constraint).

Fact: $R\pi_* (T^0 A_1 \underset{X}{*} T^0 A_2)|_U = H^*(Gr, A_1) \otimes H^*(Gr, A_2)$ (as const. sheaf)
$R\pi_* (\; ..... \;)|_\Delta = T^0 [H^*(Gr, A_1 * A_2)]$

Specialize on one point :

Let $i_x : \{x_0, x_0\} \to X$, after composing i_x^* we have a functor from $(P_{G_0}(Gr, k), *) \to (Mod_k, \otimes)$ which is a tensor functor $\simeq H^*$

§3. Construction of $\mathcal{G}$

$\boxed{\text{Proposition:}}$ $Z \subset Gr$ a clos subset which is a finite union of G_O-orb. F_V restrict to $P_{G_O}(Z, \mathbb{K})$ is repr. by a proj obj $P_Z(V, \mathbb{K})$ of $P_{G_O}(Z, \mathbb{K})$.

$P_Z(\mathbb{K}) := \bigoplus_{V} P_Z(V, \mathbb{K})$ repr. F on $P_{G_O}(Z, \mathbb{K})$

$\boxed{\text{Proposition:}}$

(a) Let $Y \subset Z$ be a closed subset consisting of G_O-orb. Then:

$$P_Y(\mathbb{K}) = PH^0(P_Z(\mathbb{K})|Y)$$

and $\exists$ a can. surj:

$$P_Z(\mathbb{K}) \to P_Y(\mathbb{K}).$$

(b) $F(P_Z(\mathbb{K}))\ (\cong H^*(P_Z(\mathbb{K})))$ is free over $\mathbb{K}$

Rq:

(b) is given by the fact: $P_Z(\mathbb{K})$ has a filt. with associated graded:

$$Gr(P_Z(\mathbb{K})) = \bigoplus_{Gr^\lambda \subset Z} F(\mathcal{I}_*(\lambda, \mathbb{K}))^* \otimes_{\mathbb{K}} \mathcal{I}_!(\lambda, \mathbb{K})$$

This is the standard graded, i.e. $F(P_Z(\mathbb{K})) = \bigoplus F(\underset{\text{free}}{A} \otimes \underset{\text{free}}{B})$

$\boxed{\text{Proposition:}}$ $\exists$ a gp-scheme $\widetilde{G}_{\mathbb{K}}$ over $\mathbb{K}$ s.t. $((Rep(\widetilde{G}_{\mathbb{K}}), \mathbb{K}), \otimes) \cong P_{G_O}(Gr, \mathbb{K})$

Furthermore, the coordinate ring $\mathbb{K}[\widetilde{G}_{\mathbb{K}}]$ is free over $\mathbb{K}$ and $\widetilde{G}_{\mathbb{K}} = Spec(\mathbb{K}) \times_{Spec(\mathbb{Z})} \widetilde{G}_{\mathbb{Z}}$

Pf":

Denote $A_Z(\mathbb{K})$ as $F(P_Z(\mathbb{K}))$. The functor $F: P_{G_O}(Z, \mathbb{K}) \to Mod_{\mathbb{K}}$ lifts to an equiv.

$$P_{G_O}(Z, \mathbb{K}) \xrightarrow{\sim} Mod_{A_Z(\mathbb{K})} \quad \text{(as ab. cat.)}$$

(In fact $P_Z(\mathbb{K})$ is the proj generator of $P_{G_O}(Z, \mathbb{K})$ i.e. it's proj. and $Hom(P_Z(\mathbb{K}), -)$ a faithful functor. By thm of Morita, we see the result. Ref: [Generators in modules and comodule categories])

Consider the $\mathbb{K}$-dual of $A_Z(\mathbb{K})$, denote it as $B_Z(\mathbb{K})$ is a coalg. By (b)

$$\Rightarrow P_{G_O}(Z, \mathbb{K}) \xrightarrow{\sim} Comodule_{B_Z(\mathbb{K})} \quad \text{(as ab. cat.)}$$

By using Verdier dual + (a): $Z \subset Z' \Rightarrow \exists\ B_Z(\mathbb{K}) \to B_{Z'}(\mathbb{K})$. Let $B(\mathbb{K}) = \varinjlim B_Z(\mathbb{K})$

$$\Rightarrow P_{G_O}(Gr, \mathbb{K}) \xrightarrow{\sim} Comodule_{B(\mathbb{K})} \quad \text{(as ab. cat.)}$$

To define $\widetilde{G}_{\mathbb{K}} = Spec(B(\mathbb{K}))$:

– $\mathrm{Spec}(B(\mathbb{k}))$ makes sense. (1)

– ... a gp-scheme. (2)

For (1): endow a commutative $\mathbb{k}$-structure on $B(\mathbb{k})$, i.e. a morph:

$$B(\mathbb{k}) \otimes_{\mathbb{k}} B(\mathbb{k}) \to B(\mathbb{k}) \quad (\text{Easy, see [M.V.]})$$

Now $\widehat{G}_{\mathbb{k}}$ is well-defined and an affine monoid.
For (2): Consider the equiv:

$$\begin{array}{ccc} \mathrm{Rep}^{\mathbb{k}\text{-proj}}_{\widehat{G}_{\mathbb{k}}} & \xrightarrow{\sim} & P^{\mathbb{k}\text{-proj}}_{G_{\mathcal{O}}}(\mathrm{Gr}, \mathbb{k}) \\ \downarrow \text{note} & & \downarrow \text{note} \\ (\triangle) & & (\square) \end{array}$$

On $(\square)$, we can endow an anti-involution given from $i: G_{\mathbb{k}} \to G_{\mathbb{k}}$: $i(g) = g^{-1}$ which makes $(\triangle)$ a rigid tensor cat. $\Rightarrow$ By "Catégories Tannakiennes" $\Rightarrow \widehat{G}_{\mathbb{k}}$ a gp-scheme.

$$\Rightarrow P_{G_{\mathcal{O}}}(\mathrm{Gr}, \mathbb{k}) \xrightarrow{\sim} \mathrm{Rep}\, \widehat{G}_{\mathbb{k}}$$

§4 Not this time