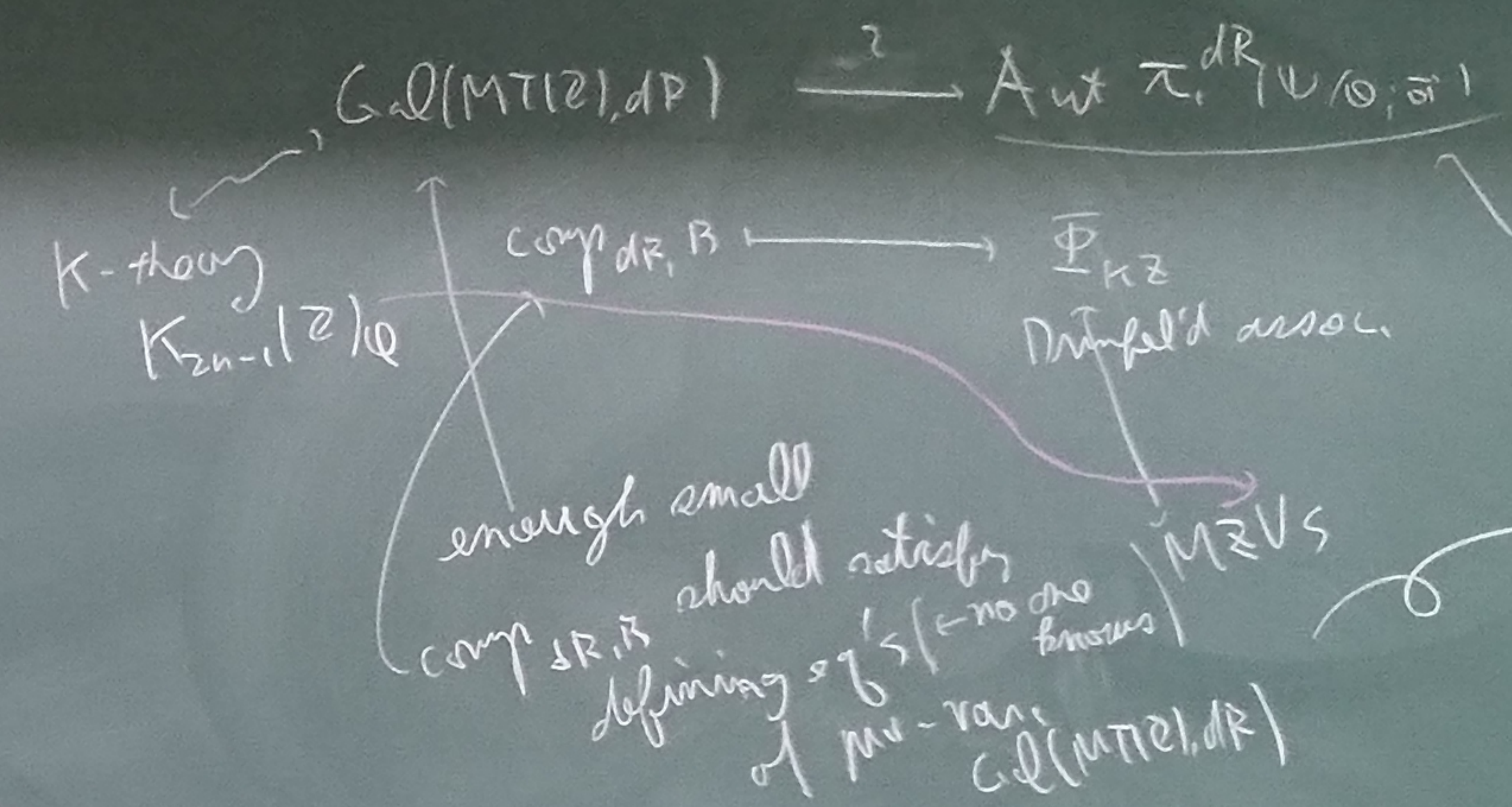


$$\text{Gal}(\text{MT}(2), dR) / \mathbb{C} \xrightarrow{\exists} \text{Comp}_{dR, B} : \mathbb{C} \otimes_{\mathbb{Q}} M_B \cong \mathbb{C} \otimes_{\mathbb{Q}} M_{dR}$$

$\downarrow$   
 $G_m(\mathbb{C}) = \mathbb{C}^* \xrightarrow{2\pi i}$

well def'd  
 up to  $G_d(\text{MT}(2), dR) / \mathbb{C}$

$\left( \mathbb{C}^* \int \frac{d\tau}{\tau} = 2\pi i \right)$



meaning  $\dots$   
 generate  $\dots$   
 $d_{n+3} = d_{n+2}$

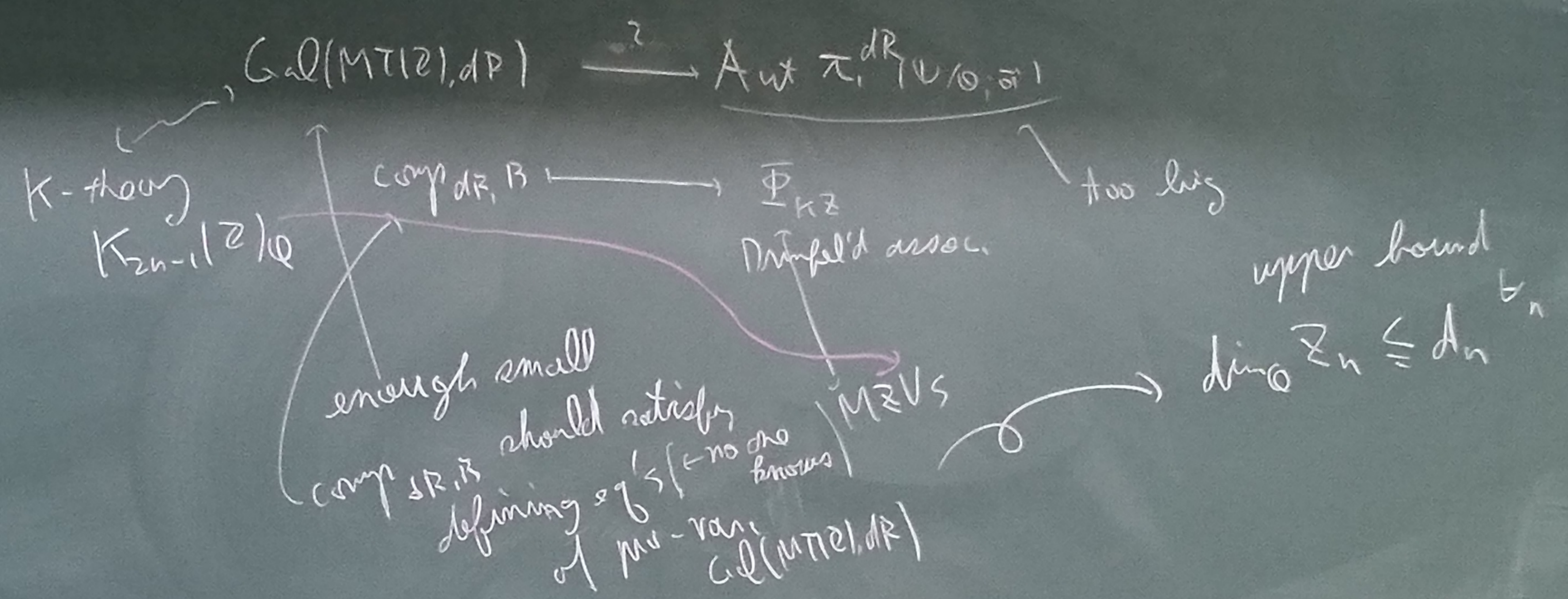
comes from  $\pi_1^M$

$$\text{Gal}(\text{MT}(2), dR) \xrightarrow{2} \text{Aut } \pi_1^{dR}(U/\mathbb{C}, \sigma)$$

$$\mathbb{C} \otimes M_B \cong \mathbb{C} \otimes M_{dR}$$

$M \subset \text{Obj}(MTIC)$   
 $G_Q(MTIC, dR)(0)$

$$\left( \mathbb{C}^* \int \frac{dT}{T} = 2\pi i \right)$$



$d_{n+1} + d_n$

comes from  $\pi_1^M$   
 $G_Q(MTIC, dR) \xrightarrow{\sim} Awt \pi_1^{dR}(U/\mathbb{Q})$   
 (Brown, motivic Beilinson)

meaning of  $\{d_n\}_{n \geq 0}$

$$d_{n+3} = d_{n+1} + d_n$$

generating fct  $\sum_{n \geq 0} d_n x^n = \frac{1}{1-x^2-x^3}$

$$= \frac{1}{1-x^2} \frac{1}{1-\frac{x^3}{1-x^2}}$$

$\text{Gal}(\overline{\mathbb{Q}}/\mathbb{Q})$

$\mathbb{Q}_p$  &  $\mathbb{Z}_p$

$\pi^2$  unit

$$= \frac{1}{1-x^2} \frac{1}{1-(x^3+x^5+x^7+\dots)}$$

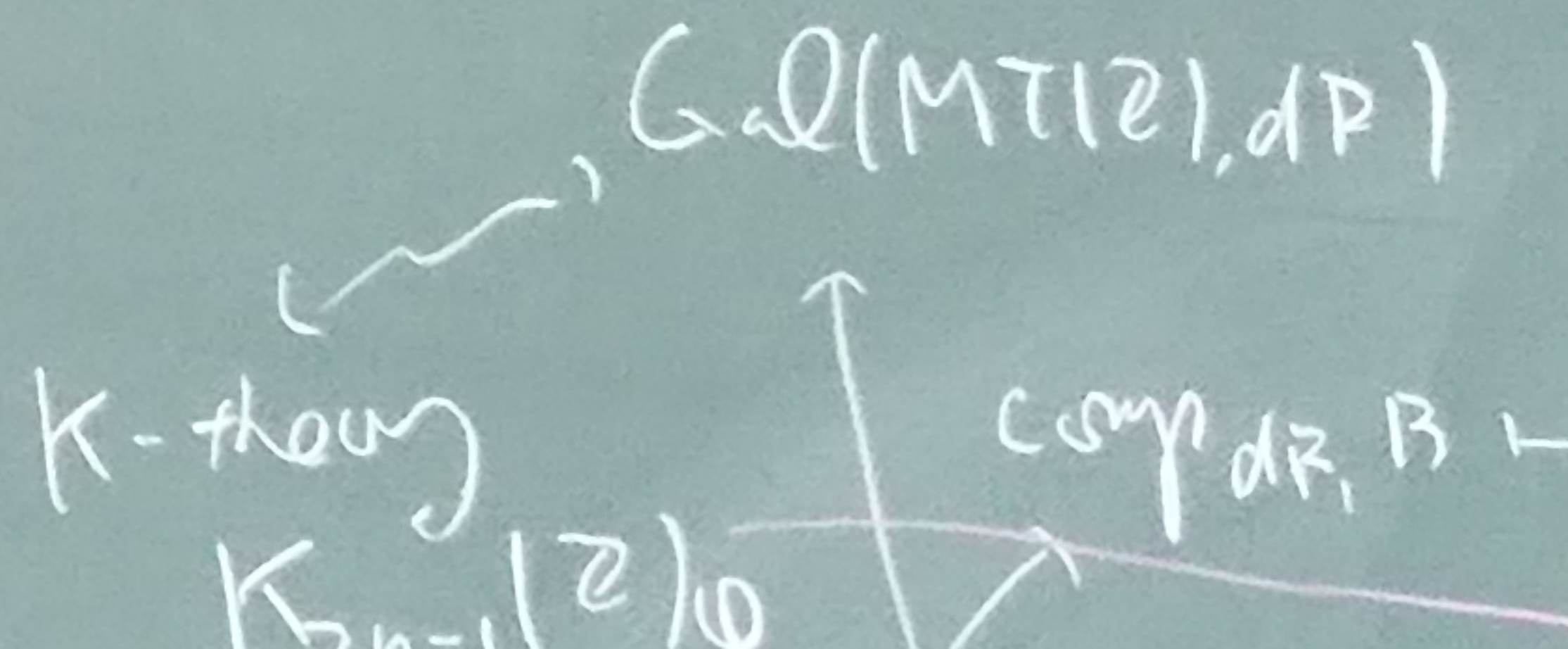
$$\text{nb } K_{2n-1}(\mathbb{Z}) = \begin{cases} 0 & n: \text{even}, n \neq 1 \\ 1 & n: \text{odd}, n \neq 1 \end{cases}$$

coeff of  $x^n =$

$x^1$	$= 0$
$x^2$	$= 0$
$x^3$	$= 1$
$x^4$	$= 0$
$x^5$	$= 1$
$x^6$	$= 0$
$x^7$	$= 1$
$x^8$	$= 0$
$x^9$	$= 1$
$x^{10}$	$= 0$
$x^{11}$	$= 1$
$x^{12}$	$= 0$
$x^{13}$	$= 1$
$x^{14}$	$= 0$
$x^{15}$	$= 1$

$v_p(\text{disc } \mathbb{Z}_p)$   
# of generators in series

Dom  $\exists$   $p$ -adic analogue of the above case, & Rem)



$$|K_{2n-1}(\mathbb{Z})| = \begin{cases} 0 & n: \text{even or } = 1 \\ 1 & n: \text{odd, } \neq 1 \end{cases}$$

coeff of  $x^i =$

$x^1$	$= 0$
$x^2$	$= 0$
$x^3$	$= 1$
$x^4$	$= 0$
$x^5$	$= 1$

$v(\omega \sqrt{dR})$   
# of generators  
- series

Rem multiple L-values

$$MT(\mathbb{Z}(\mu_{n+1-p}/\mu_n))$$

$\rightarrow$  use  $K_{2n-1}(\mathbb{Z}(\mu_{n+1-p}/\mu_n))$

Conj (Grothendieck)

$$\text{Gal}(MT(\mathbb{Z}), dR) \cong \text{comp}_{dR, B} \text{ in } \mathbb{Q}\text{-Zariski dense}$$

(i.e.  $\text{comp}_{dR, B}^* \rightarrow \text{Gal}(MT(\mathbb{Z}), dR, \mathcal{O}) \rightarrow \mathbb{C}^*$ )

Lemma the above conj. implies

Zagier's dimension conj.  
invariant conj.

$$\text{Gal}(MT(\mathbb{Z}), dR) \xrightarrow{\cong} \text{Aut } \pi_1^{dR}(\mathbb{Z}/\mathcal{O}, \mathcal{O})$$

K-theory  
 $K_{2n-1}(\mathbb{Z})/\mathcal{O}$

$$\text{comp}_{dR, B} \rightarrow \Phi_{KZ}$$

Drinfeld's assoc.

too big

upper bound

$$Z_n \subseteq A_n \hookrightarrow b_n$$

Rem)  $\exists$   $p$ -adic analogue of  
the above seq. & Rem)  
(Y.)

(The  $p$ -adic dir. seq.)  
 $d_{n+3} = d_{n+1} + d_n$   
 $d_0 = 1, d_1 = 0, d_2 = 0$

$\Downarrow$   
#  $2\pi i = 0$  in the  $p$ -adic world?  
from  $\mathbb{Q}_p$