$$THH_S^x(\ell, H\mathbb{F}_p)[v_0] \implies THH^x(\ell, H\mathbb{Z}_{(p)})$$

$$E(x_{2p-1}, x_{2p^2-1}) \otimes \Gamma(c_{2p^2}) \qquad T(C)/_{C^p}$$

$$THH_S^x(\ell, H\mathbb{F}_p) \otimes THH_{\mathbb{F}}(\ell, H\mathbb{F}_p) \qquad T(C)/_{pc}$$

$\xrightarrow{id \otimes \text{comultiplication}}$

$$THH_S^x(\ell, H\mathbb{F}_p) \otimes THH_x(\ell, H\mathbb{F}_p) \otimes THH_{:0}(\ell, H\mathbb{F}_p)$$

$$\frac{THH_x(\ell, H\mathbb{F}_p)}{2p^3-1}$$

$\xrightarrow{ev \otimes id} \quad \mathbb{F}_p \otimes THH_{\mathbb{F}}(\ell, H\mathbb{F}_p)$

$$\mathbb{Z}/_p \subset \mathbb{Z}/_{p^2}(c) \qquad p^2$$

$$THH_S^{\mathbb{Z}}(A, B) = F_B(THH(A,B), B) \qquad `C^p = 0 \text{ in } E^\infty$$

$\boxed{C^p = p! \gamma_p}$

$$THH(A) \wedge_A B = THH(A, B) \qquad B$$

$\downarrow$

$$Ext^{\wedge}\left(\mathbb{Z}/p^n, \mathbb{Z}_{(p)}\right)$$

$$\mathbb{Z}/p^n$$

$$\mathbb{Z}/p^n$$

$$THH(A) \wedge_A THH(A) \wedge_A B$$

$\parallel$

$$THH(A) \wedge_A B \wedge_B THH(A) \wedge_A B$$

$$|\alpha_p| = 8p^3 - 1$$

$$u_2^{p-1} \lambda_2$$

$$C_1 C_1 = 2 \cdot C_2$$

$$THH_S(A, B) = F_{B \wedge A}(B, B) \qquad F_{A \wedge A}(A, B) \qquad C^3 = 2 C_2 C_1$$

$$= 2 \cdot 3 C_3$$

$$\mathbb{Z} \cdot F_B$$

$$A \wedge B \wedge_{A \wedge A} A \wedge A$$

$$A \wedge A \to A \wedge B$$

$$F_{A \wedge B}\left(\overbrace{A \wedge A}^{B} A, B\right)$$

$$A \wedge A$$

$$= A \wedge_A B = B$$

$$\overbrace{F_{A\wedge B}(B,B)\wedge \frac{B\wedge B}{B\wedge A}}^{THH(A,B)} \longrightarrow \frac{B\wedge B}{B\wedge A}$$

$$\underset{S}{\quad}$$

$$S^1 = D^1 \amalg_{S^0} D^1$$

$$\frac{B \wedge B}{THH^{(0)}(A,B)}$$

$$THH(A,B) = \sout{THH}\, \widehat{(A,B)\otimes D^1} \wedge$$
$$(A,B)$$

$$THH(\mathbb{Z}_{(p)})$$

$$\mathbb{Z}[u]\otimes E(\partial t) \implies THH(\mathbb{Z})$$

$$\underset{\mathbb{Z}}{\Gamma}(d_2)\otimes \underset{\mathbb{Z}}{E(x_1)} \implies THH^\beta(\mathbb{Z})$$

$$\Gamma(\partial \gamma_p(d))/$$

$$d(x_1\,\gamma_2) = (2+1)\,\gamma_{2+1}$$

$$\nearrow \mu_2^{\mathbb{R}}$$

$$\gamma_2(c) \cap a_i$$

$$\gamma_2(c)(u_2^{i-1}\,\lambda_2)$$

$$\psi(u_2^{i-1}\,\lambda_2) = \left(\sum_{j=0}^{i-1}\binom{i-1}{\otimes\,j}u_2^{j}\otimes u_2^{i-1-j}\right)$$

$$(1\otimes \lambda_2 + \lambda_2\otimes 1)$$

$$\binom{i-1}{k} u_2^k \otimes \lambda_2 u_2^{i-1-k}$$

$$\binom{i-1}{k} \quad a_{i-k}$$