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1. Know few computations + very few tools:
 - a. What are the Steenrod algebras for Bredon cohomology with coeff. in a Mackey functor M ? Orig: M a field
 - b. What is the Nilpotence theorem?
 - $RO(G)$ -graded
2. Algebraic models are often naive: \mathbb{Z} -modules, rather than A -modules
3. Many constructions could possibly benefit from new perspectives.
induction is coinduction = *Virthumüller isomorphism* for finite
4. Rational characteristic classes

$$K(\mathbb{R}) \xrightarrow[\text{Bokstedt}]{\text{trace}} THH(\mathbb{R}) = S^1 \otimes \mathbb{R}$$

1.) THH is genuine S^1 -spectrum

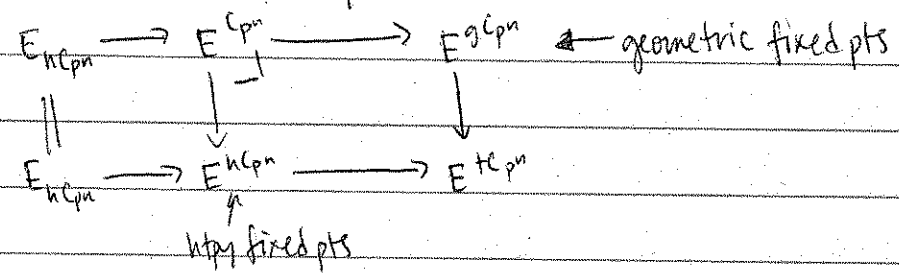
2.) $K(\mathbb{R}) \longrightarrow THH(\mathbb{R})^{S^1}$

can replace $THH(\mathbb{R})^{S^1}$ w/ continuous \mathbb{Q}/\mathbb{Z} -fixed pts.

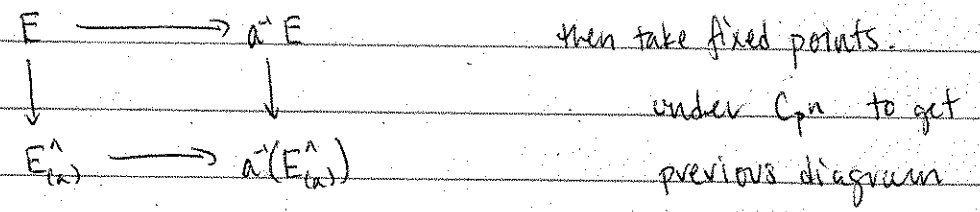
$$G = \varinjlim F_i \quad R^{G^h} = \varprojlim R^{F_i}$$

Localized at p , we instead consider a tower of the fixed pts for $C_p^n \subseteq S^1$

usual method: "Hasse square"



$a: S^0 \longrightarrow S^1$ Euler class. (for reduced reg. rep.)



Conj: the Euler classes + their "quasi-inverses" are the only nonnilpotent

elts in $T_{\mathbb{Z}} S^0$

Quasi-inverse: $A = C_2$ $a_0: S^0 \leftarrow S^0$

$\rightarrow \bar{a}: S^0 \rightarrow S^0$

quasi inv. to idempotent in Burnside ring

$THH(\mathbb{Z})$ is cyclotomic:

$$THH(\mathbb{Z})^{C_p} \cong THH(\mathbb{Z})$$

$$S^1/C_p \cong S^1$$

Ex: $\mathbb{Z}[x]$, $C_p \otimes \mathbb{Z}[x] = \mathbb{Z}[x, gx, \dots, g^{p-1}x]$

$$\mathbb{Z}[x] \rightarrow (C_p \otimes \mathbb{Z}[x])^{C_p}$$

$f(x) \mapsto \prod g^i f(x)$ multiplicative, but not additive

$$\mathbb{Z}[x] \rightarrow (C_p \otimes \mathbb{Z}[x])^{C_p} \rightarrow \mathbb{C} / \text{Im}(\text{tr})$$

surjection $\rightarrow \mathbb{Z}/p[x, gx, \dots, g^{p-1}x]$

"geometric fixed pt = fixed pts (mod image of transfer"

• need to remember that $C_p \otimes \mathbb{Z}$ should give a Burnside ring \rightarrow

this means that "p" is not a transfer + we don't get \mathbb{Z}/p

• that gives a sort of algebraic version of the spectrum level.

$$\begin{array}{ccc} THH(\mathbb{Z})^{C_p^n} & \xrightarrow{R} & THH(\mathbb{Z})^{C_{p^{n-1}}} \\ \downarrow & & \downarrow \\ THH(\mathbb{Z})^{h C_p^n} & \longrightarrow & THH(\mathbb{Z})^{+C_{p^{n-1}}} \end{array}$$

Equivariant

K-theory via trace methods etc

restrictions
transfers

} Mackey functor

{ Frobenius
Verschiebung
restriction

$$K(\mathbb{Z}) \rightarrow \lim_{\leftarrow} (TR(\mathbb{Z}) \xrightarrow{f} TR(\mathbb{Z}))$$

$$\lim_{\leftarrow} (TF(\mathbb{Z}) \xrightarrow{f} TF(\mathbb{Z}))$$