1. Know few computations + very few tools:
   a. What are the Steenrod algebras for Bredon cohomology with coeff. in a Mackey functor \( M \)? Ovg: \( M \) a field
   b. What is the Nilpotence Theorem?

   \( R_0.(a) \)-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 = Whitehead, homotopy functors for finite

4. Rational characteristic classes

\[
K(R) \xrightarrow{\text{trace}} \text{THH}(R) = S^0 \otimes R
\]

1) \( \text{THH} \) is genuine \( S^1 \)-spectrum

2) \( K(R) \xrightarrow{\text{local}} \text{THH}(R)^{S^1} \)

Can replace \( \Psi \text{THH}(R)^{S^1} \) with continuous \( \mathbb{Q}/\mathbb{Z} \)-fixed pts.

\[
a = \lim F_i; \quad R^0 = \lim P_i
\]

Localized at \( p \), we instead consider a tower of the fixed pts for \( C_p^* \leq S^1 \)

Usual method: "Hasse square"

\[
\begin{array}{ccc}
E_{\text{rep}} & \xrightarrow{\cdot p} & E_{\text{rep}}^p \\
\downarrow & & \downarrow \\
E_{\text{rep}} & \xrightarrow{\cdot p} & E_{\text{rep}}^p \\
\end{array}
\]

High fixed pts

\[a : S^0 \rightarrow S^1 \text{ Euler class: for reduced reg. rep.}\]

\[
E \xrightarrow{a} a^*E \quad \text{then take fixed points.}
\]

\[
E_{(a)} \xrightarrow{a^*} a^*(E_{(a)}) \quad \text{under } C_p^* \text{ to get previous diagram}
\]

Conj: the Euler classes + their "quasi-inverses" are the only non-nilpotent
Th in $T^* S^0$. Quasi-inverse: $G = C_2$, $a_o : S^0 \to S^0$

$\bar{G} : S^0 \to S^0$

quasi inv to idempotent in Burnside ring

$THH(R)$ is cyclotomic

$THH(R)^{C_p} = THH(R)$

$S / C_p \cong S$

Ex: $\mathbb{Z}[x]$, $C_p \otimes \mathbb{Z}[x] = \mathbb{Z}[x, y_1, \ldots, y_p^p]$

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

$\mathbb{Z}[x] \to \prod \mathbb{Z}[x]$ multiplicative, but not additive

$\mathbb{Z}[x] \to (C_p \otimes \mathbb{Z}[x])^{C_p} \to \lim\mathbb{Z} / (\ldots)$

quotient $\to \mathbb{Z}[x, y_1, \ldots, y_p^p]$

"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.

\[ THH(R)^{C_p} \xrightarrow{p} THH(R)^{C_{p^{n-1}}} \]

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Equivariant $K$-theory via trace methods etc

restrictions \{ Mackey functor \{ Frobenius transfers \}

\{ Verschiebung restriction \}

\[ \pi(R) \to \lim \left( TR(R) \xrightarrow{p} TR(R) \right) \]

\[ \lim \left( TF(R) \xrightarrow{p} TF(R) \right) \]