

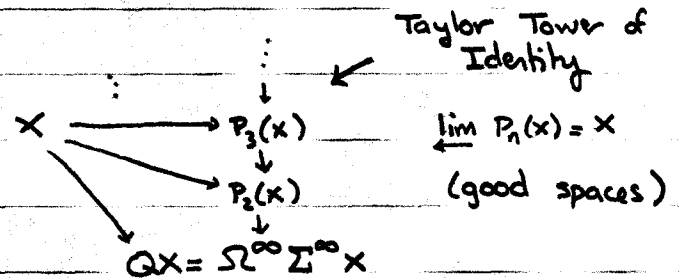
Delooping the Connecting Maps in the Taylor Tower

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(Joint w/ W. Dwyer & K. Lesh)

I. Given X , get a tower of fibrations

Gives a way to pass from stable to unstable information



Know a lot about this:

$$D_n(X) = \text{Fiber}(P_n(X) \rightarrow P_{n-1}(X))$$

$$\Omega^\infty((W_n \wedge X^n)_{hZ_n}) \quad , \text{ so just like } \frac{1}{n!}$$

derivative X^n

the Taylor series. Since these are ∞ loop spaces, have maps

$$P_n(X) \leftarrow D_n(X)$$

$$\downarrow$$

$$BD_n(X) \leftarrow P_{n-1}(X)$$

\Rightarrow connecting (k -invariant style) maps $D_{n-1}(X) \rightarrow BD_n(X)$

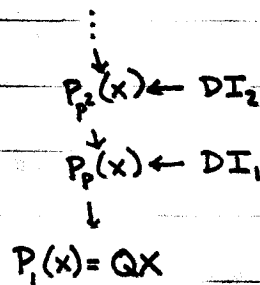
This gives the d_i differential in the SS for $\pi_*(X)$, using the tower.

Fix a prime $p \neq 2$ let $X = S^m$, m odd, $p > 2$, m anything, $p = 2$.

Thm In this case, $D_n(X) \simeq *$ unless $n = p^k$.

We can then regrade the tower

$$DI_k = D_{p^k}(X)$$



Want a connecting map, and since

$$P_{p^k}(X) \xrightarrow{\simeq} P_{p^{k-1}}(X)$$

$$\downarrow \quad \uparrow$$

$$BDI_k \leftarrow \alpha_{k-1} \leftarrow DI_{k-1}$$

this is our connecting map

Have another functor

$$V \longmapsto BU(V)$$

\mathbb{C} -vect \rightarrow Spaces
1-index product

Have a Weiss calculus starting with

$$BU = \varinjlim BU(V)$$

after p -completing, again have faster