Recall $\mathcal{A}_{\geq n} = \mathcal{A}_{\geq n+1} = \text{category of } n\text{-connected spectral }
\mathcal{A}_{\geq n}$

It leads (formally) to functors $f^\pi_0$ with Postnikov: kill $\pi_i$ for $i \geq n$

$P_{n+1}$ is $n$-connected cover.

We want to define subcategories $A_{\geq n}$ in the $G$-equivariant case.

Will define it in terms of basic building blocks as before.
Let $H \subset G$ be a subgroup.

$\rho_H = \text{regular rep of } H = R[H_H]\),

$S_{mH} = H$-space on spectrum $S(m,H)$.

$G_+ = G$ with disjoint base $pt$.

The underlying space (for $m > 0$) in a wedge of $|G/H|$ copies of $S^{mH}$. $G$ acts by permuting the wedge summands, each of which is $H$-invariant. $H$ acts as indicated on $S^{mH}$. 
Let $A = \bigcup \{ S^2(m, H) \cup S^1 \mathbb{S}^2(m, H) : m \geq 2 \}$ and $H \in G$.

These are called slice cells.

E.g., for $H = e$, $S^2(m, e) = G_e \cup S^2_m = \text{wedge of } 16_e \text{ copies of } S^2_m$.

$S^2(m, e)^H = pt$ for $H \neq e$.

$\Sigma S^2(m, e) = \Sigma S^2(m-1, e)$.

The dimension of a slice cell is that
Def $A_{\geq n}^G$ is the subcategory of $A^G$ (the category of $G$-spectra) "built" out of slice cells of dimension $\geq n$. This subcategory of $A^G$:

1) Full (all morphisms included)

2) Closed under cofibers

$x \rightarrow y \rightarrow z$ cofiber sequence

If $x, y \in A_{\geq n}^G$ then $z \in A_{\geq n}^G$

3) Closed under extensions

If $x, z \in A_{\geq n}^G$ then $y \in A_{\geq n}^G$
4) Not closed under fibers.
\[ y \in A \Rightarrow x \in A \] does NOT IMPLY \( x \in A \).

5) Closed under infinite wedges and retracts.

6) Closed under direct limits.

\( A \) has similar properties.

This leads to functors \( P^n \) and \( P^{n-1} \) as before.

We will see later than if \( X \)
is a slice of dim \( -n \), then

\[ P^n X = X \times H \]
We have looked at this for $G_i = C_i$ and $n=4$ $X = S^4$ and $G_i = C_2$ and $X = S^{kP_2}$, respectively. We found \[ \prod_i P^i X = \bigvee_i X \] can be non-zero for $0 \leq i \leq n$. This differs from the classical case.

We have for a $G$-spectrum $X$

\[
\begin{array}{ccc}
P_{n+1}X & \to & X \\
\downarrow & & \downarrow \\
P_nX & \to & P^{n-1}X \\
\vdots & & \vdots \\
P_1X & \to & P^0X
\end{array}
\]
\( \mathcal{C}_G \) = category of \( G \)-spectra.

This leads to the diagram

\[ \cdots \rightarrow \mathbb{P}^n X \rightarrow \mathbb{P}^{n-1} X \rightarrow \cdots \]

the slice tower for \( X \).

\( \lim \mathbb{P}^n X = \) point, and

\( \lim \mathbb{P}^n X = X \)

We also have slices

\( \mathbb{P}^n X = \) fiber of \( \mathbb{P}^n X \rightarrow \mathbb{P}^{n-1} \)

Classically, this is \( K(\pi_n X, n) \).

In this case, it is not
concentrated in dimension in.

We get a spectral sequence with

\[ E_1^{s,t} = \prod_{t-s} P_t^s X \]

Classically

\[ E_1^{s,t} = \prod_{t-s} P_t^s X \]

\[ = \begin{cases} \prod_{t-s} X & \text{if } s = 0 \\ \emptyset & \text{if } s \neq 0 \end{cases} \]

This case is uninteresting.

Remarks about change of group.

Let \( H \leq \leq G \).
Let $X \equiv n$ if $X \in X_{\geq n}$ and $X \leq n$ if the map $X \to P^n X$ is an equivalence.

Classically, $X \equiv n$ means $X$ is $(n+1)$-connected.

$\pi_i X = 0$ unless $i \geq n$.

$X \leq n$ if $\pi_i X = 0$ unless $i \leq n$. 
In the general case
\[ x \geq n \text{ means } [W, x]^G = \emptyset \]
when \( W \) is a slice cell of \( \dim < n \).
\[ x \leq n \text{ means } [W, x]^G = \emptyset \]
when \( W \) is a slice cell of \( \dim > n \).