CW Complexes

Def CW complex is a top sp glued via discs. Built inductively,

1) $\exists$ 0 skeleton $X^{(0)}$ – discrete set

2) Constr. $X^{(n)}$ n-skeleton

Attach $\coprod_\alpha D^n_\alpha$ to $(n-1)$-skeleton via attaching maps $\varphi^n_\alpha : \partial D^n_\alpha \to X^{(n-1)}$

Then consider

$X = \bigcup_n X^{(n)}$ ↷ nested filtration

& give it the weak topology

→ ie $C \subset X$ is (closed) open

$\iff$ $C \cap X^{(n)}$ is open in $X^{(n)}$ $\forall\, n$.

Def

- characteristic map is $D^n_\alpha \hookrightarrow X^{(n-1)} \sqcup_\alpha D^n_\alpha \to X^{(n)} \to X$
- (open n cell) e^n_α is img of int D^n_α

  (closure of this is closed n-cell
- Dimension → max'l dim of cell
- finite → if we req fin many disc
- Subcomplex of X called A is a union of cells closed in X.