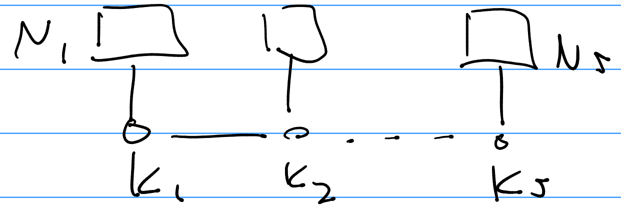
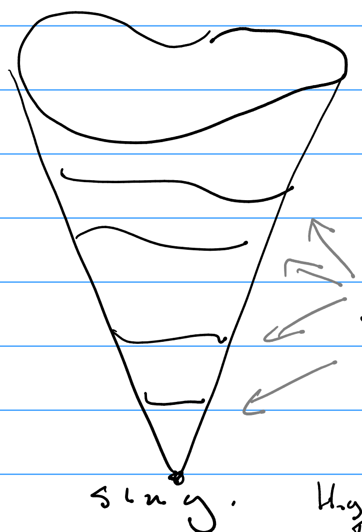
Gauge @ IGAP

Sympl. leaves for sympl. sing's – Hanany



- Higgs br. → HK quotient $\Big\}$ symplectic singularities
- 3d Coulomb br.

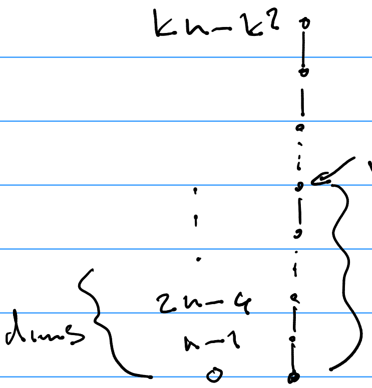
- we restrict to lower dim's (H)
- symmetry F, commuting w $SU(2)_R$



← along Higgs branch patterns of sym. breaking given by partial Higgsing

Higgs branch of (...)

- example: $H\left(\begin{array}{c}\boxed{n}\\ | \\ \circ\, k\end{array}\right) = \{ M_{n\times n} \mid \operatorname{tr} M = 0,\ M^2 = 0,\ rk(M) \le k \}$
  - rank $0, 1, \ldots, k$
    $\Rightarrow$ $k+1$ leaves: $\bigcup_{i=0}^{k} M_i$, $M_i \leftrightarrow rk = i$
  - Hasse diagram:

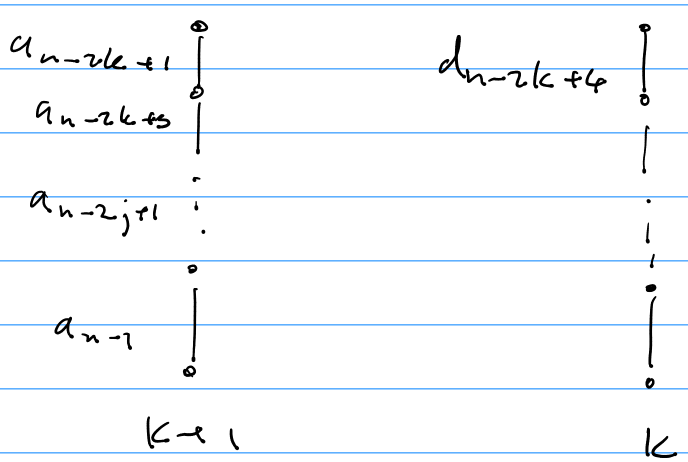


$\dim H\left(\begin{array}{c}\boxed{n}\\ | \\ \circ\, j\end{array}\right) = nj - j^2$

$\bigcup_{i=0}^{j} M_i = H\left(\begin{array}{c}\boxed{n}\\ | \\ \circ\, j\end{array}\right)$

- Kibble '67 (Higgsing)
  - $H \subset G$, $R = \sum a_i \rho_i$, ρ_i - irreps of H, a_i - multiplicities
  - $Adj = Adj_R + \sum b_i \rho_i$
  - $\to$ resulting theory: H w/ rep $R' = \sum (a_i - b_i)\rho_i$
- ρ_0 - trivial rep, $(a_0 - b_0) \geq 0$, $(a_i - b_i) \geq 0$
- notion for simplicity # leaves
- Kraft-Procesi: nilpotent orbits:
  ADE klein sing.'s, min. nilp. orb of an alg gp G
- example: $\begin{array}{c} n\ \square \\ | \\ k\ \circ \end{array} \longrightarrow \begin{array}{c} n\ \square \\ | \\ k\ \circ \end{array}$

  $Gl(k)$ $\qquad$ $SL(k)$



- Coulomb br instead:

$$H\begin{pmatrix} n\ \square \\ k\ \circ \end{pmatrix} = \mathcal{C}\Big(\underset{1}{\circ} - \underset{2}{\circ} - \cdots - \underbrace{\underset{k}{\overset{1\,\square}{\circ}} \cdots \underset{k}{\overset{1\,\square}{\circ}}}_{n-2k+1} - \cdots - \underset{2}{\circ} - \underset{1}{\circ} \Big)$$