

Hyperplane Arrangements

V - k -dim v.s. over k ,

$\mathcal{V} = \{\nu_1, \dots, \nu_n\} \subset V^*$ defines a hyperplane arrangement in V :

$$\mathcal{A} = \{V; H_i = \ker \nu_i\}$$

Characteristic Polynomial:

$$\chi(\mathcal{A}, t) = \sum_{S \subseteq [n]} (-1)^{|S|} t^{\dim H_S}$$

$$H_S = \bigcap_{s \in S} H_s$$

Graphs embed in hyperplane arrangements:

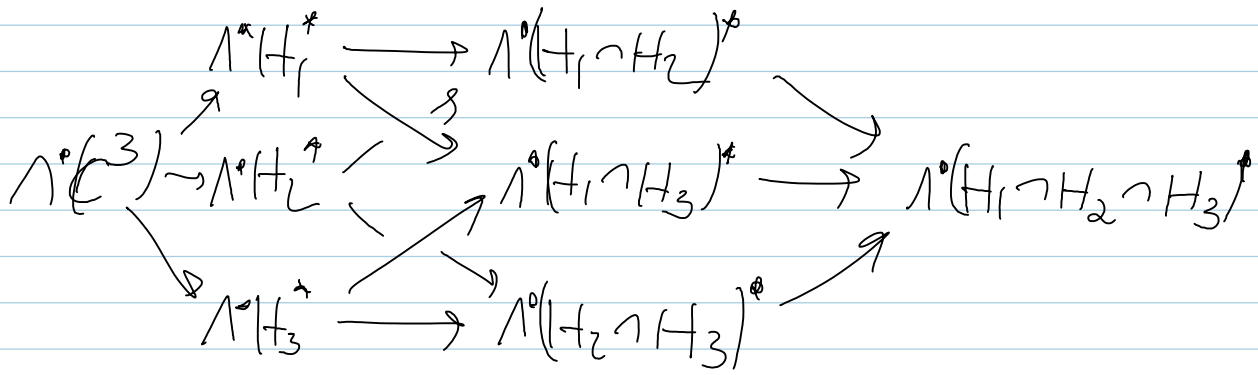
if $e_i = (v_k, v_\ell)$, take $H_i = \ker(x_k - x_\ell)$

Goal. Categorify $\chi(\mathcal{A}, t)$ - find a cohomology theory s.t.

$$\chi(\mathcal{A}, t) = \chi_q(H^*(\mathcal{A}))$$

↑
maybe some

variable
substitution



-----> get a differential.