A hyperplane arrangement is a finite set of affine hyperplanes in a real affine space. Let $\mathcal{J}_n$ be the hyperplane arrangement consisting of all hyperplanes (or walls) $H_{ij}$, $0_k$, $1_l$, where, for each $i, j, k,$ and $l \in \{1, 2, \ldots, n\}$,

$$H_{ij} := \{x \in \mathbb{R}^n \mid x_i + x_j = 1\} = H_{ji}$$

and

$$0_k := \{x \in \mathbb{R}^n \mid x_k = 0\}, \text{ and } 1_l := \{x \in \mathbb{R}^n \mid x_l = 1\}.$$ 

The number of the regions, i.e., the connected components of $\mathbb{R}^n \setminus \bigcup_{H \in \mathcal{J}_n} H$ is given by the characteristic polynomial $\chi_n(t)$. We formulate $\chi_n(t)$ via enumerative combinatorics and finite field method. We give a direction forward generalizing this process to $\mathcal{H}_n$, whose walls are of the form

$$w_S = \left\{x \in \mathbb{R}^n \mid \sum_{i \in S} x_i = 1 \right\}.$$ 

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