$$\binom{n}{k} k! = \frac{n(n-1)\ldots(n-k+1)}{k!} \cdot k!$$

$$\leq n \cdot n \cdot n \cdot \ldots n = \underline{n^k}$$

$$\boxed{t = n^{-k/\lambda}}$$

$$\boxed{\frac{p(n)}{t(n)} = \gamma(n)}$$

$$\sigma^2 = E\left((X-\mu)^2\right)$$

$$= E\left(X^2 - 2\mu X + \mu^2\right)$$

$$= E(X^2) - 2\mu^2 + \mu^2$$

$$= \frac{E(X^2) - \mu^2}{\mu^2}$$

$$\frac{\sigma^2}{\mu^2}$$

$$X = \sum_{H \in \mathcal{H}} \underline{X_H}$$

$$E(X^2) = \sum_{H \in \mathcal{H}} X_H \cdot \sum_{H \in \mathcal{H}} X_H$$

$$= \sum_{(H', H'') \in \mathcal{H}^2} P\left[H' \cup H'' \subseteq G\right]$$

$\cancel{X_{H'} = 1}$

$\cancel{X_{H''} = 0}$

$X_{H'} = 1$

$X_{H''} = 1$

$\cancel{X_{H'} = 0}$

$\cancel{X_{H''} = 0}$

$\cancel{X_{H'} = 0}$

$\cancel{X_{H''} = 1}$

$$\left(\sum_{H' \in \mathcal{H}} P(H' \subseteq G)\right) \cdot \left(\sum_{H'' \in \mathcal{H}} P(H'' \subseteq G)\right)$$

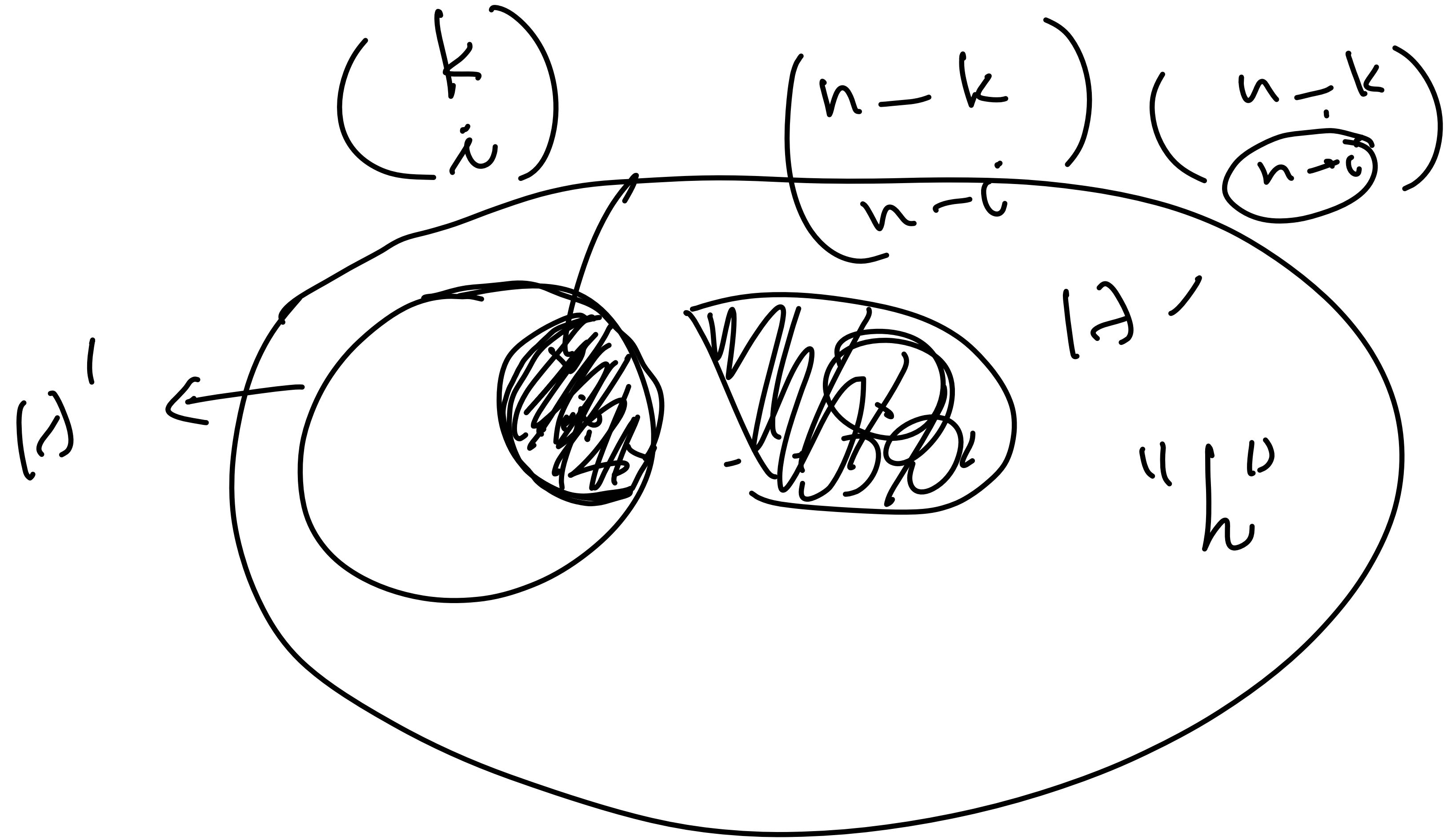
μ μ

$$E(x^2) = A_0 + \underbrace{A_1 + \cdots + A_k}$$

$$\mu^2$$

$$\frac{\sigma^2}{\mu^2} = \frac{E(x^2) - \mu^2}{\mu^2} = \left(\frac{A_1 + A_2 + \cdots + A_k}{\mu^2} \right)$$

$$0 \qquad\qquad 0$$


$\binom{k}{i}$
$\binom{n-k}{n-i}$
$\binom{n-k}{n-i}$
"n"

G — without a K_k

without a S_k

Bad event — Having K_k

" — Having S_k

$\left.\begin{array}{l}\text{Having } K_k \\ + \\ \text{Having } S_k\end{array}\right\} < 1$

$E_1, E_2, E_3, \ldots, E_n$

$p_1 \leq p \quad p_2 \leq p \quad p_3 \leq p \quad \ldots \quad p_n \leq p$

good

$$\sum p_i < 1 \qquad \bigcap \overline{E_i}$$

pn

$E_1, E_2, \ldots, E_n$

$I \subseteq [n)$

$$P\left(\bigcap_{i \in I} E_i\right) = \prod_{i \in I} P(E_i)$$

$$\Downarrow$$

$$P\left(\bigcap_{i \in I} \overline{E_i}\right) = \boxed{\prod_{i \in I} P(\overline{E_i})}$$

$s_1 - t_1 \leftarrow \} \; F_1$ ✓

$s_2 - t_2 \} \longrightarrow F_2$ ✓

$s_3 - t_3 \longrightarrow F_3$ ✓

$\vdots$

$s_n - t_n \longrightarrow F_n$ ✓

$p \in F_i$

p will not intersect with more than k paths in F_j

$i \neq j$

$|F_i|$?

$s_i - t_i$

$\frac{1}{|F_i|}$

$s_i - t_1$

E_{ij}

$s_j - t_j$

(i, j) , $\frac{1}{|F_i|}$

$$p(E_{ij}) \leq \frac{k}{m}$$

$2n$

$$\boxed{4pd \leq 1}$$

$$4\frac{k}{m}d \leq 1$$

$$\boxed{\frac{8kn}{m} \leq 1} \Rightarrow$$