$\mathbb{E}X^k$

$$\mathbb{E}\left[Z_{ij}^k \mathbb{1}\left[\|Z\| > u^{1/2}\eta \right]\right]$$

$$Z = (H + u^{-1/2}P)$$

"

$\mathbb{E}[\ Z_{ij}$

$\mathbb{E}X^k \leq (\mathbb{E}X)^k$

$\boxed{P \text{ unknown}}$

$= \mathbb{E}\left[\mathbb{F}\left[Z \ \cdots \ \middle| P \right]\right]$

Z

$\mathbb{1}[\ -c < Z_{ij} < u^{1/4}\eta^{1/4})$

$=$

$\sum Z_{ij}^2 > u^{1/2}\eta$

$Z_{ij}^2 > \frac{u^{1/2}\eta}{D^2}$ same i,j

$Z_{ij}^2 > \frac{u^{1/2}\eta}{D}$ $\forall i,j$

So $\mathbb{1}\left[\cancel{Z_{ij}^2 > \frac{u^{1/2}\eta}{D} \ \forall i,j}\right] \leq \mathbb{1}\left[\sum Z_{ij}^2 > u^{1/2}\eta\right]$

$\mathbb{1}\left[Z_{ij}^2 > u^{1/2}\eta\right]$