

$$\mathbb{E}[z_j^k \mathbb{1}[\|z\| > u^{1/2} \eta]]$$

$$u^{-1/2} P + 2H$$

$$\| \quad z = \underline{b_n(u^{-1/2} P + 2H)}$$

$$\begin{aligned} \mathbb{E} \left[\mathbb{E} \left[\cancel{z_j^k} b_n(z) \mathbb{1} \left[\underbrace{\| u^{-1/2} P + 2H \|}_{\leq \|u^{-1/2} P\| + 2\|H\|} > u^{1/2} \eta \right] \right] \right] \\ \leq \mathbb{1} [2\|H\| > u^{1/2} \eta] \end{aligned}$$

$$= \sum \mathbb{E}[(u^{-1/2} P_j)^k] \cancel{O} O(e^{-\frac{u^{1/2} \eta}{2\|H\|}})$$