Theorem: Under some regularity assumptions on η, provided that $\frac{n}{k} > \Omega(2^d)$, with probability at least $1 - \delta$

$$|\hat{d}(X_1) - d| \leq O\left(d\left[B\left(\frac{k}{n}\right)^{\frac{1}{d}} + \sqrt{\frac{\ln(4/\delta)}{k}}\right]\right)$$