Theorem

For any $h \in \mathbb{R}$, $\delta \in (0,1)$, *and* $\epsilon > 0$, *if* $\beta_t = 2\log(|D|\pi^2 t^2/(6\delta))$, *LSE terminates after at most* T *iterations, where* T *is the smallest positive integer satisfying*

$$\frac{T}{\beta_T \gamma_T} \geq \frac{C_1}{4\epsilon^2},$$

where $C_1 = 8/\log(1+\sigma^{-2})$.
Furthermore, with probability at least $1-\delta$, *the algorithm returns an* ϵ*-accurate solution, that is*

$$\Pr\left\{\max_{\boldsymbol{x}\in D} \ell_h(\boldsymbol{x}) \leq \epsilon\right\} \geq 1-\delta.$$