Upper bound on $\sum_{i=1}^{N} w_i^{T+1}$ for **Hedge**(η)

Lemma (upper bound)

For any sequence of loss vectors $\ell^1, \ldots, \ell^T$ we have

$$\ln\left(\sum_{i=1}^{N} w_i^{T+1}\right) \leq -(1 - e^{-\eta}) L_{\textbf{Hedge}(\eta)}.$$