According to Clovis and Sudderth [6], they claim that the infinity-StLA is optimal. We have

\[ P = \frac{1}{N} \sum_{i=1}^{N} x_i \]

**Proof.** The assertion follows from Lemma 3.3 and Theorem 3.2, because

\[ \{0 \leq (x)_{\theta} : \theta \in \mathbb{R} \} = \{x \in \mathbb{R} : x \geq 0\} \]

**Lemma 3.3.** Let \( S \subseteq \mathbb{R}^n \). Then \( x \in S \) if and only if \( x \) satisfies

\[ \sum_{i=1}^{N} x_i = 0 \quad \text{and} \quad \sum_{i=1}^{N} x_i^2 = 0 \]

with respect to \( P \), that is,

\[ \sum_{i=1}^{N} x_i^2 \leq \sum_{i=1}^{N} x_i^2 \]

**Assumption 3.2.**

**Theorem 3.1.** Under Assumptions 2.1 and 2.2, the infinity-StLA rule is optimal.

**Time Out**

**Similarity as before, we shall refer to the infinity-StLA rule if the rule is based on the first hitting time.

\[ X \stackrel{d}{=} \mathbf{f} \quad \text{and} \quad \mathbb{P}(X = \mathbf{f}) = \frac{1}{N} \sum_{i=1}^{N} x_i \]

**Theorem 3.2.** Let \( S \subseteq \mathbb{R}^n \). Then \( x \in S \) if and only if \( x \) satisfies

\[ \sum_{i=1}^{N} x_i = 0 \quad \text{and} \quad \sum_{i=1}^{N} x_i^2 = 0 \]

The above can be explained following Lemma 3.1.

\[ \sum_{i=1}^{N} x_i^2 = 0 \quad \text{and} \quad \sum_{i=1}^{N} x_i^2 = 0 \]

Note that if \( f = 1 \), then the OLA rule is optimal. In this case.

\[ \sum_{i=1}^{N} x_i = 0 \quad \text{and} \quad \sum_{i=1}^{N} x_i^2 = 0 \]

**Lemma 3.1.** For all \( x \in S \), the upper bound could be

\[ \sum_{i=1}^{N} x_i^2 = 0 \quad \text{and} \quad \sum_{i=1}^{N} x_i^2 = 0 \]

as follows:

If \( x \) is obtained by Lemma 3.2.

**Corollary 3.4.**

Hence, \( (x)_{\theta} \) is proved by Lemma 3.2.

\[ \sum_{i=1}^{N} x_i^2 = 0 \quad \text{and} \quad \sum_{i=1}^{N} x_i^2 = 0 \]

Since \( x \) is obtained by Lemma 3.2, we have

\[ \sum_{i=1}^{N} x_i^2 = 0 \quad \text{and} \quad \sum_{i=1}^{N} x_i^2 = 0 \]

On the other hand, we have

\[ \sum_{i=1}^{N} x_i^2 = 0 \quad \text{and} \quad \sum_{i=1}^{N} x_i^2 = 0 \]

Next, we shall show

\[ \sum_{i=1}^{N} x_i^2 = 0 \quad \text{and} \quad \sum_{i=1}^{N} x_i^2 = 0 \]

Since \( x \) is obtained by Lemma 3.2, we have