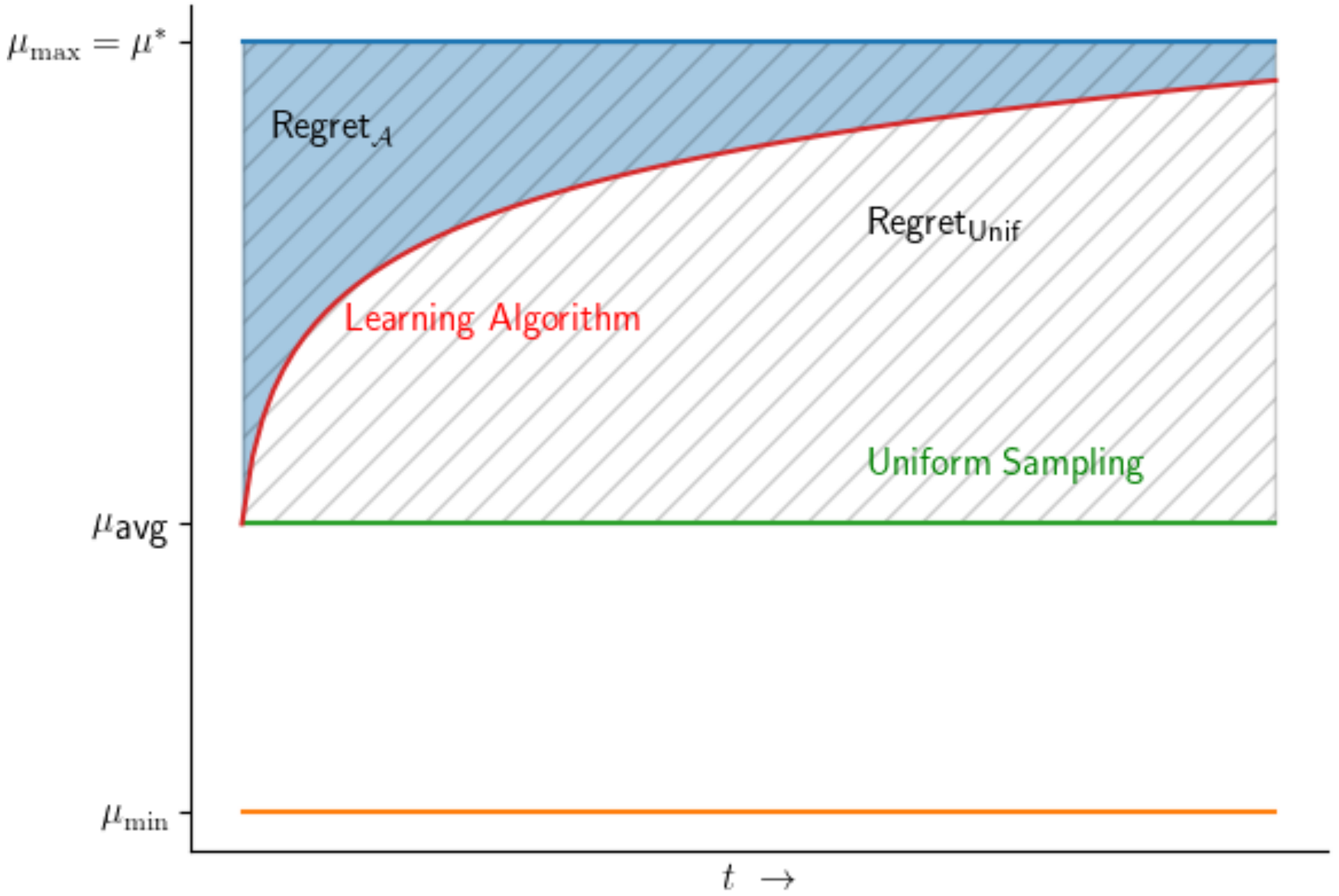
Regret simplified



$$\mu_{avg} = \frac{1}{K}\sum_{a=1}^{K}\mu_a$$

$$\mu_{\min} = \min_{a\in[K]}\mu_a$$

How to get sub-linear regret ?

- **Explore sub-optimal arms:** We need to sample every sub-optimal arms infinitely often as budget $T \to \infty$, to be certain about their sub-optimality.

- What if we sample some sub-optimal arm finite no. of times? The collected samples can be large with positive probability and the arm may appear good !!

- **Exploit the best arm:** Our algorithm must satisfy: $\lim_{T \to \infty} \frac{\mathbb{E}[N_{a^\star}(T)]}{T} = 1.$