

Abstract:

The randomized  $k$ -server conjecture, which had been open for over three decades, states that there exists an  $O(\log k)$ -competitive randomized algorithm for the  $k$ -server problem. In this talk, I will present our recent joint work with Sébastien Bubeck and Yuval Rabani, where we refute this conjecture by giving a lower bound of  $\Omega((\log k)^2)$ . Our work also settles the competitive ratio of metrical task systems to be  $\Theta((\log n)^2)$  on the hardest metric spaces and  $\Theta(\log n)$  on the easiest metric spaces of  $n$  points. In particular, this yields the first improvement over the previous “coupon collector” lower bound since the introduction of the model in 1987.