

ROBUST MECHANISM DESIGN

By

Silvio Micali

MIT

ABSTRACT

Mechanism design aims at guaranteeing a desired property P (dependent on the players' secret data) by leveraging the players' knowledge and rationality. Traditionally, it does so by constructing a game G such that P holds at one or more of G 's equilibria. This traditional approach, however, is uniquely vulnerable to “equilibrium selection, collusion, complexity, and privacy.” Ultimately, therefore, our desired properties may be far from guaranteed.

We thus put forward *implementation in robust strategies*, a new, equilibrium-less, and robust approach to mechanism design, and exemplify it for both classical and novel design problems.

(Based on joint works with Jing Chen, Chen and Avinatan Hassidim, and Chen and Paul Valiant)