Fixed Point Computation and Equilibrium
Abstract of Keynote Talk

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The rise of the Internet has created a surge of human activities that make computation, communication and optimization of participating agents accessible at micro-economic levels. Fundamental equilibrium problems of games and markets, including algorithms and complexity as well as applications have become active topics for complexity studies. Algorithmic Game Theory has emerged as one of the highly interdisciplinary fields, in response to (and sometimes anticipating) the need of this great revolution, intersecting Economics, Mathematics, Operations Research, Numerical Analysis, and Computer Science.

The mathematical model underlying various forms of equilibrium is the fixed point concept. The discovery, and applications, of the close relationship between the fixed point and equilibrium concepts has played a major role in shaping Mathematical Economics. In computation, it continues to influence our understanding of complexity and algorithmic design for equilibrium problems. In this talk, I will discuss some recent development in fixed point computation, together with application problems, such as sponsored search auctions and envy-free cake cuttings.

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