Iterated Random Functions and Incremental M-Estimation in High Dimensions

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In this talk, I will present an exact analysis of the dynamics of several online incremental M-estimators for high-dimensional estimation problems. In the large systems limit, the dynamics of these algorithms converge to trajectories governed by a set of deterministic, coupled ODEs. Combined with suitable spectral initialization, this analysis establishes the theoretical performance guarantee of these efficient incremental methods for solving both convex and nonconvex estimation problems in high dimensions.