## Differential Information in Large Games with Strategic Complementaries

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## Abstract

We study equilibrium in large games of strategic complementarities (GSC) with a differential information and continuum of players. For our game, we define an appropriate notion of distributional Bayesian-Nash equilibrium in the sense of Mas-Colell (1984), and prove its existence. Further, we characterize the order-theoretic properties of the equilibrium set, provide monotone comparative statics results for ordered perturbations of the space of games, and provide explicit algorithms for computing extremal equilibrium. Our results make use of new results on aggregating single crossing properties as discussed in Quah, Strulovici (2011). We then complement these with new results on the existence of Bayesian-Nash equilibrium in the sense of Balder, Rustichini (1994) or Kim, Yannelis (1997) for large GSC, and provide analogous results for this notion of equilibrium. We apply our result to the analysis of riot games, "beauty contests" and common value auctions. To show our results we prove an auxiliary fixed point theorem on monotone operators in countably complete partially ordered sets.

**keywords:** large games, differential information, distributional equilibria, supermodular games, aggregating single crossing properties, computation **AMS Classification:** 06B35, 46F25

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