Preface: Special Issue on Stochastic Games

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To celebrate the 60th anniversary of the seminal paper “*Stochastic Games*” of L.S. Shapley [16], *Dynamic Games and Applications* is proud to publish this special issue. Shapley’s paper on stochastic games has had a tremendous scientific impact on the theory and applications of dynamic games and there is still a very active research on these domains. In addition, as can be seen by the content of this volume, the theoretical model as well the potential for applications develops in new directions including continuous time framework, link with evolutionary games, algorithmic game theory, economics, and social networks.

The idea to devote a special issue to celebrate the 60th anniversary of Shapley’s paper [16] emerged a few years ago, and the decision was taken in 2011. Since then, we had the great pleasure to enjoy the attribution to Llyod Shapley of the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2012¹ “for the theory of stable allocations and the practice of market design,” jointly with Alvin Roth. This is the occasion to recall the importance of Shapley’s contributions in other areas of game theory like:

- core for TU and NTU cooperative games;
- equivalence principle for large economies;
- matching (with David Gale);

¹The reader may visit: http://www.nobelprize.org/nobel_prizes/economics/laureates/2012/.

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- cooperative games with a continuum of players (with Robert Aumann);
- Shapley value and other power indices;
- repeated games (with information lag, survival);
- fictitious play and the Shapley triangle;
- potential noncooperative games (with Dov Monderer);
- simple games, convex games;
- price mechanisms;
- fixed points and index of equilibria.

The papers included in this volume cover only a part of the area of stochastic games. Their references give a lot of information on the existing literature on this topic. We would like to point out, however, that the impact of Shapley's article [16] on the theory of stochastic games is much larger than this volume shows. It cannot be described in detail in a short introduction to this volume. To give a more complete picture of the state of the art in the area of stochastic games, we include a list of useful references for basic (classical) results and surveys of earlier advances and related areas, like incomplete information and repeated games:

- Markov decision processes [3, 8];
- zero-sum repeated games, the Shapley operator, the asymptotic approach and the uniform approach [12–14, 19];
- games with signals and link to incomplete information games [12–14, 19];
- nonzero-sum games: asymptotic and uniform approach [14, 17, 20];
- Nash and correlated equilibria [2, 12–15, 17, 20];
- links with quitting games and stopping games [17, 18];
- infinite state space stochastic games [8, 11, 13, 14, 17];
- algorithms and dynamics for stochastic games [4, 5, 7, 13, 14];
- turnpike theorems for Markov games, overtaking optimality [10];
- stochastic games with weakly continuous transitions and robust policies in dynamic economic models (growth theory) [8];
- applications in computer science, telecommunication, and economics [1, 2, 7, 8, 14];
- stochastic strategic market games [6, 9].

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