

Evolutionary games with time constraints

Vlastimil Krivan

Czech Academy of Sciences, Ceske Budejovice, Czech Republic

Classic matrix games (e.g., the Hawk-Dove model, Prisoner dilemma), which are based on pair-wise interactions between two opponents with player payoffs given in matrix form, do not consider the effect that conflict duration has on payoffs. However, interactions between different strategies often take different amounts of time. In my talk I will describe a new approach to an old idea that opportunity costs lost while engaged in an interaction affect individual fitness.

When applied to the Hawk-Dove and Prisoner's dilemma, this theory that incorporates general interaction times leads to qualitatively different predictions. In particular, not all individuals will behave as Hawks when fighting cost is lower than benefit, and cooperation will evolve in the Prisoner's dilemma.