

Population equilibrium and its fitness in evolutionary matrix games

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Abstract

We consider an evolutionary game $[A, A^T]$ with no dominant behaviour, where $A \in R^{n \times n}$ (a population is divided into n number of phenotypes). We give formulae for the proportion of the i -th phenotype to the j -th phenotype in the population equilibrium and for its fitness.

We illustrate these results by the well known Hawk-Dove Game, which is similar to many games in economics, politics, etc. At first we consider 2×2 game, including the cases when the game converts in the famous Prisoner's Dilemma or in the Chicken Game.

After that we consider the three-by-three Skyrms Modest-Fair-Greedy Game.