

SOME RESULTS ON EVOLUTIONARY 2 X 2 ASYMMETRIC GAMES

Yunshyong CHOW *Institute of Mathematics, Academia Sinica, Taipei, Taiwan*
E-mail: chow@math.sinica.edu.tw

KEY WORDS: Nash equilibrium, Battle of Sex game, evolutionary games, local interaction, mutation

MATHEMATICAL SUBJECT CLASSIFICATION: 91A22; 60J20

Abstract:

A typical 2 x 2 asymmetric game model is the Battle Of Sex game. There exist 3 Nash equilibria. Two are unlikely as players are not allowed to communicate with each other. The third one is a mixed strategy. Under which, the expectation payoff of each player is very low. That seems unreasonable. In the evolutionary game setup, we consider $2n$ players sitting around a circle with nearest neighborhood interaction. The long run equilibrium can be explicitly obtained and then the expectation payoff of each player can be computed, which largely improved the previous payoff.

References

- [1] H.C. Chen & Y. Chow (2009). Evolutionary prisoner's dilemma games with one-dimensional local interaction and imitation, *Adv. Applied Probab.*, **41**, 154-176.
- [2] J. Hofbauer & K. Sigmund (1998). Evolutionary Games and Replicator Dynamics, *Cambridge University Press*.
- [3] J.H. Wang (1988). The Theory of Games, *Tsinghua University Press*.