Zero-Sum Repeated Games with Stage Duration and Public Signals

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Repeated games with public signals

Figure: An example of the signaling function *f*

1) In a zero-sum repeated game with public signals, at each stage, two adversary players choose actions: 2) Players receive a stage payoff which depends on the players' actions and on the stage's state; 3) At the end of the stage, a new state ω is chosen according to some probability distribution, and both players receive the public signal $f(\omega)$.

Games with stage duration

1) In a repeated game with stage duration $h \in (0, 1]$, at each stage, the stage payoff and the probability to change the state is proportional to h;

2) One can think that players act at times $0, h, 2h, \ldots$ instead of acting at times $0, 1, 2, \ldots$ as in the usual repeated game:

4) Main question: What happens with values when $h \rightarrow 0$? 5) Such a question was already studied for the case when players can observe the state (i.e. for the case of stochastic games);

6) We study the same question for the case when the players cannot observe the state, but they receive a public signal on it.