

TITLE: "Mean-payoff Games: Imperfect vs. Incomplete Information"

ABSTRACT: Mean-payoff games are important quantitative models for open reactive systems. They have been widely studied as games of perfect information. In game theory the concepts of partial, imperfect and incomplete information indicate situations where players have asymmetric knowledge about the state of the game. We focus on mean-payoff games with two types of such asymmetric information. The two are equivalent, and previous works on mean-payoff games with imperfect information have already shown that determining whether one player has a winning strategy is undecidable. However, these two types of asymmetric information allow us to define a few natural subclasses of games for which we still have decidability. As our second result, we present an alternative definition of determinacy for games with imperfect information and show that mean-payoff games with imperfect information are determined under our definition.