

Centro de Investigação em Matemática e Aplicações  
Departamento de Matemática  
Programa de Doutoramento em Matemática

## Seminário

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### Dynamics of envy behavioural decisions in a game with two types of homogeneous players

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**Abstract:** An envy behavioural game theoretical model with two types of homogeneous players is considered in this paper. The preferences of each type of players are defined by a discrete utility functions while strategy space for each type of players is a discrete set with only two alternatives. We characterize all envy strategies that form Nash equilibria and the corresponding envy Nash domains for each type of players and we study the influence of the envy behaviour parameters on the dynamics of the underlying envy equilibria. We use discrete geometry to construct a two dimensional envy tilings in which the horizontal axis reflects the preference for players of type one, while the vertical axis reflects the preference for the players of type two. In each envy tiling, we determine all envy Nash equilibria for both types of players and we prove that there are 1024 combinatorial classes of envy tilings generated from the corresponding envy chromosomes. In this dynamic game, we found that there are 256 of them are being structurally stable while 768 are with bifurcation. Finally, we state some conditions for the existence of disparate envy Nash equilibria.

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