

ANALYSIS SEMINAR

**AN APPLICATION OF
TOPOLOGICAL GAME THEORY
TO ANALYSIS**

BRIAN DAVIS

WEDNESDAY, SEPTEMBER 29, 2004 IN ROOM 331 AT 3:00 PM

ABSTRACT Consider the following topological game, which is similar to the known Banach- Mazur Game (1930). The description of the game is taken from Topological properties defined by games and their applications (2002, Topology and its Applications). Let X be a topological space and F a proper filterbase in X . Player A chooses a point x_1 in X . Player B responds by choosing a member F_1 of F . Player A chooses x_2 in F_1 Player B wins the game if the sequence $(x_n)_{n \in \mathbb{N}}$ has a cluster point. If there is a strategy, σ , for player B that always results in player B winning the game, the filterbase F (along with the corresponding strategy) is called a σ -filterbase. Surprisingly, the image of a σ -neighborhood filterbase via the external map of an upper semi-continuous multifunction is a σ -filterbase. This has applications to the so called Choquet-Dolecki Theorems.