Random Social Choice Functions on Multidimensional Domains

We study Random Social Choice Functions (RSCF's) in an environment where the set of alternatives is a Cartesian product. We generalize the notion of connectedness (Monjardet (2009)) to establish a class of domains of multidimensional domains which we call $connected^+$ *domains.* We show that in the class of minimally rich and $connected^+$ *domains*, a unanimous and strategy-proof RSCF satisfying a compromise property exists if and only if the domain of preferences is multidimensional single-peaked. We next study another important subclass of $connected^+$ *domains*, the domain of separable preferences and show that a unanimous RSCF is strategy-proof if and only if it is a generalized random dictatorship and that an ex post efficient RSCF is strategy-proof if and only if it is a random dictatorship.