Universal Characterization Sets for the Nucleolus in Balanced Games

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Abstract

We provide a new modus operandi for the computation of the nucleolus in cooperative games with transferable utility. Using the concept of dual game we extend the theory of characterization sets. Dually essential and dually saturated coalitions determine both the core and the nucleolus in monotonic games whenever the core is non-empty. We show how these two sets are related with the existing characterization sets. In particular we prove that if the grand coalition is vital then the intersection of essential and dually essential coalitions forms a characterization set itself. We conclude with a sample computation of the nucleolus of bankruptcy games - the shortest of its kind.