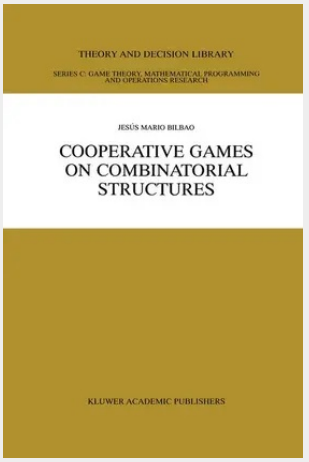
Bilbao

# Cooperative Games on Combinatorial Structures




The aim of is to analyze conflict situations in which two or more players can make coalitions and obtain prizes and penalties. This approach to situations of competition and cooperation was given in the seminal treatise by John von Neumann and Oskar Morgenstern, . Cooperative game theory has succeeded in providing many applications of game theory.
In this volume, games defined on combinatorial structures will be analyzed, i.e. a set system over a set of players. In many situations the author will work in a . Examples of closure operators are the spanning operator of linear algebra and all convex hull operators.
Chapters 1-4 constitute a review of mathematical concepts from and . The table of contents is a short guide to the topics and methods covered in this book. In Chapters 11 and 12, several notebooks are presented with the system Mathematica by Wolfram in the contexts of the packages (Skiena) and (Carter). There will also be found in the book several research projects. These are intended to offer new ideas that the reader should consider with caution.
This book will be of interest to graduate students with some experience in game theory or mathematical programming and professional researchers in game theory, operational research and its applications in economic theory, and the political and social sciences. In addition, it will be especially useful for professionals who are interested in models for understanding and managing conflicts: management and operational research scientists, political and military scientists, and professional negotiators.

The aim of Cooperative Games on Combinatorial Structures is to analyze conflict situations in which two or more players can make coalitions and obtain prizes and penalties. This approach to situations of competition and cooperation was given in the seminal treatise by John von Neumann and Oskar Morgenstern, Theory of Games and Economic Behavior. Cooperative game theory has succeeded in providing many applications of game theory. In this volume, games defined on combinatorial structures will be analyzed, i.e. a set system over a set of players. In many situations the author will work in a closure space. Examples of closure operators are the spanning operator of linear algebra and all convex hull operators. Chapters 1-4 constitute a review of mathematical concepts from Cooperative Game Theory, Graph Theory, Linear and Integer Programming, Combinatorial Optimization, Discrete Convex Analysis and Computational Complexity. The table of contents is a short guide to the topics and methods covered in this book. In Chapters 11 and 12, several notebooks are presented with the system Mathematica by Wolfram in the contexts of the packages DiscreteMath (Skiena) and Cooperative (Carter). There will also be found in the book several research projects. These are intended to offer new ideas that the reader should consider with caution. This book will be of interest to graduate students with some experience in game theory or mathematical programming and professional researchers in game theory, operational research and its applications in economic theory, and the political and social sciences. In addition, it will be especially useful for professionals who are interested in models for understanding and managing conflicts: management and operational research scientists, political and military scientists, and professional negotiators.

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