

Preface

Dynamic spectrum access (DSA) is an efficient and promising approach to solve the dilemma between spectrum shortage and waste, which is mainly caused by the traditional static and pre-allocated spectrum access policies. The users in DSA systems have the ability to sense the environment, learn from history information, and then adjust their decisions in a smart and dynamic manner. Owing to the intelligent spectrum decision manner and open transmission in wireless communications, interference coordination among the interactive users becomes the primary concern.

Game theory is a powerful tool to study the interactions among multiple autonomous decision-makers. However, since it is a branch of applied mathematic, some new challenges with regard to information constraints should be addressed when it is applied to interference coordination for DSA systems. The purpose of this book is to bridge game theory and practical interference mitigation approaches, by taking into account the incomplete and dynamic information constraints in wireless communication networks. It establishes a game-theoretic framework and presents the cutting-edge technologies for distributed interference coordination. With game-theoretic formulation and the designed distributed learning algorithms, it provides insights on the interactions among the multiple decision-makers and the converging stable states. Furthermore, some promising and novel interference models are presented. We believe that it contains valuable knowledge, useful methods and practical algorithms that can be considered in emerging 5G wireless communication networks.

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