1. Record Nr.   UNINA9910300116003321

   Autore   Carmona René

   Titolo   Probabilistic Theory of Mean Field Games with Applications II : Mean Field Games with Common Noise and Master Equations / / by René Carmona, François Delarue

   Pubbl/distr/stampa   Cham : , : Springer International Publishing : , : Imprint : Springer, , 2018

   ISBN   3-319-56436-6

   Edizione   [1st ed. 2018.]

   Descrizione fisica   1 online resource (697 pages)

   Collana   Probability Theory and Stochastic Modelling, , 2199-3130 ; ; 84

   Disciplina   530.1595

   Soggetti   Probabilities
                             Calculus of variations
                             Differential equations, Partial
                             Economics
                             Probability Theory and Stochastic Processes
                             Calculus of Variations and Optimal Control; Optimization
                             Partial Differential Equations
                             Economic Theory/Quantitative Economics/Mathematical Methods

   Lingua di pubblicazione   Inglese

   Formato   Materiale a stampa

   Livello bibliografico   Monografia

   Nota di bibliografia   Includes bibliographical references and index.

   Nota di contenuto   Foreword -- Preface to Volume II -- Part I: MFGs with a Common Noise -- Optimization in a Random Environment -- MFGs with a Common Noise: Strong and Weak Solutions -- Solving MFGs with a Common Noise -- Part II: The Master Equation, Convergence, and Approximation Problems -- The Master Field and the Master Equation -- Classical Solutions to the Master Equation -- Convergence and Approximations -- Epilogue to Volume II -- Extensions for Volume II -- References -- Indices.

   Sommario/riassunto   This two-volume book offers a comprehensive treatment of the probabilistic approach to mean field game models and their applications. The book is self-contained in nature and includes original material and applications with explicit examples throughout, including numerical solutions. Volume II tackles the analysis of mean field games in which the players are affected by a common source of noise. The

first part of the volume introduces and studies the concepts of weak and strong equilibria, and establishes general solvability results. The second part is devoted to the study of the master equation, a partial differential equation satisfied by the value function of the game over the space of probability measures. Existence of viscosity and classical solutions are proven and used to study asymptotics of games with finitely many players. Together, both Volume I and Volume II will greatly benefit mathematical graduate students and researchers interested in mean field games. The authors provide a detailed road map through the book allowing different access points for different readers and building up the level of technical detail. The accessible approach and overview will allow interested researchers in the applied sciences to obtain a clear overview of the state of the art in mean field games.