Record Nr. UNINA9910523748903321 Autore Marghitu Dan B. Titolo Mechanical Simulation with MATLAB® / / by Dan B. Marghitu, Hamid Ghaednia, Jing Zhao Pubbl/distr/stampa Cham:,: Springer International Publishing:,: Imprint: Springer,, 2022 **ISBN** 3-030-88102-4 Edizione [1st ed. 2022.] Descrizione fisica 1 online resource (256 pages) Collana Springer Tracts in Mechanical Engineering, , 2195-9870 620.10015118 Disciplina Soggetti **Dynamics** Nonlinear theories Mechanics Robotics **Applied Dynamical Systems** Classical Mechanics Robotic Engineering Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Nota di contenuto Introduction -- Classical Analysis of a Mechanism with One Dyad --Contour Analysis of a Mechanism with One Dyad -- Classical Analysis of a Mechanism with Two Dyads -- Contour Analysis of a Mechanism with Two Dyads -- Dyad Routines for Mechanisms -- Epicyclic Gear Trains -- Cam and Follower Mechanism -- Direct Dynamics. Sommario/riassunto This book deals with the simulation of the mechanical behavior of engineering structures, mechanisms and components. It presents a set of strategies and tools for formulating the mathematical equations and the methods of solving them using MATLAB. For the same mechanical systems, it also shows how to obtain solutions using a different approaches. It then compares the results obtained with the two methods. By combining fundamentals of kinematics and dynamics of mechanisms with applications and different solutions in MATLAB of problems related to gears, cams, and multilink mechanisms, and by

presenting the concepts in an accessible manner, this book is intended

to assist advanced undergraduate and mechanical engineering

graduate students in solving various kinds of dynamical problems by using methods in MATLAB. It also offers a comprehensive, practice-oriented guide to mechanical engineers dealing with kinematics and dynamics of several mechanical systems.