1. Record Nr. UNINA9910734900803321 Autore Guzman Jose Luis Titolo Automatic control with interactive tools / / José Luis Guzmán, Ramon Costa-Castelló, Manuel Berenguel, Sebastián Dormido Cham, Switzerland: ,: Springer International Publishing, , [2023] Pubbl/distr/stampa **ISBN** 3-031-09920-6 Edizione [1st ed. 2023.] 1 online resource (366 pages) Descrizione fisica 050 Disciplina 629.8 Soggetti Automatic control System theory Control theory Computer science **Engineering mathematics** Engineering—Data processing Control and Systems Theory Systems Theory, Control Computer Science Mathematical and Computational Engineering Applications Control automàtic Llibres electrònics Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Nota di contenuto 1. Introduction -- 2. From Nonlinear Physical Models to Linear Models -- 3. Time Response -- 4. Frequency Response -- 5. Relationship Between Model Parameters with Physical Models -- 6. Closed-Loop Systems and Stability -- 7. Control Systems Design -- 8. Control of Physical Systems -- 9. Introduction to Control Systems Design in State Space. Sommario/riassunto Automatic Control with Interactive Tools is a textbook for undergraduate study of automatic control. Providing a clear course structure, and covering concepts taught in engineering degrees, this

book is an ideal companion to those studying or teaching automatic

control. The authors have used this text successfully to teach their students. By providing unique interactive tools, which have been designed to illustrate the most important automatic control concepts. Automatic Control with Interactive Tools helps students overcome the potential barriers presented by the significant mathematical content of automatic control courses. Even when they have previously had only the benefit of an introductory control course, the software tools presented will help readers to get to grips with the use of such techniques as differential equations, linear algebra, and differential geometry. This textbook covers the breadth of automatic control topics, including time responses of dynamic systems, the Nyquist criterion and PID control. It switches smoothly between analytical and practical approaches. Automatic Control with Interactive Tools offers a clear introduction to automatic control, ideal for undergraduate students, instructors and anyone wishing to familiarize themselves with the fundamentals of the subject.