

1. Record Nr.	UNINA9910483414703321
Autore	Nesteruk Igor
Titolo	COVID-19 pandemic dynamics : mathematical simulations / / Igor Nesteruk
Pubbl/distr/stampa	Gateway East, Singapore : , : Springer, , [2021] ©2021
ISBN	981-336-416-5
Edizione	[1st ed. 2021.]
Descrizione fisica	1 online resource (XII, 172 p. 77 illus., 46 illus. in color.)
Disciplina	362.1962414
Soggetti	COVID-19 Pandemic, 2020-
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Introduction -- Data used for calculations, comparisons and verifications -- Classical SIR model and the exact solution of differential equations -- Results of SIR simulation for the pandemic dynamics in different countries and regions -- Procedures of the parameter identification for the waves of epidemics -- Conclusions.
Sommario/riassunto	This book highlights the estimate of epidemic characteristics for different countries/regions in the world with the use of known SIR (susceptible-infected-removed) model for the dynamics of the epidemic, the known exact solution of the linear differential equations and statistical approach developed before. The COVID-19 pandemic is of great interest to researchers due to its high mortality and a negative impact to the world economy. Correct simulation of the pandemic dynamics needs complicated mathematical models and many efforts for unknown parameters identification. The simple method of detection of the new pandemic wave is proposed and SIR model generalized. The hidden periods, epidemic durations, final numbers of cases, the effective reproduction numbers and probabilities of meeting an infected person are presented for countries like USA, Germany, UK, the Republic of Korea, Italy, Spain, France, the Republic of Moldova, Ukraine, and for the world. The presented information is useful to regulate the quarantine activities and to predict the medical and economic consequences of different/future pandemics. .

