1. Record Nr. UNINA9910795854203321

Autore	Klafter J (Joseph)
Titolo	First steps in random walks [[electronic resource]] : from tools to applications / / J. Klafter and I.M. Sokolov
Pubbl/distr/stampa	Oxford, : Oxford University Press, 2011
ISBN	0-19-155295-X 0-19-177502-9 1-299-48624-X
Descrizione fisica	vi, 152 p. : ill
Altri autori (Persone)	SokolovIgor M. <1958->
Disciplina	519.2/82
Soggetti	Random walks (Mathematics)
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	1. Characteristic functions -- 2. Generating functions and applications -- 3. Continuous-time random walks -- 4. CTRW and aging phenomena -- 5. Master equations -- 6. Fractional diffusion and Fokker-Planck equations for subdiffusion -- 7. Levy flights -- 8. Coupled CTRW and Levy walks -- 9. Simple reactions : A+B->B -- 10. Random walks on percolation structures.
Sommario/riassunto	"The name "random walk" for a problem of a displacement of a point in a sequence of independent random steps was coined by Karl Pearson in 1905 in a question posed to readers of "Nature". The same year, a similar problem was formulated by Albert Einstein in one of his Annus Mirabilis works. Even earlier such a problem was posed by Louis Bachelier in his thesis devoted to the theory of financial speculations in 1900. Nowadays the theory of random walks has proved useful in physics and chemistry (diffusion, reactions, mixing in flows), economics, biology (from animal spread to motion of subcellular structures) and in many other disciplines. The random walk approach serves not only as a model of simple diffusion but of many complex sub- and super-diffusive transport processes as well. This book discusses the main variants of random walks and gives the most important mathematical tools for their theoretical description"--