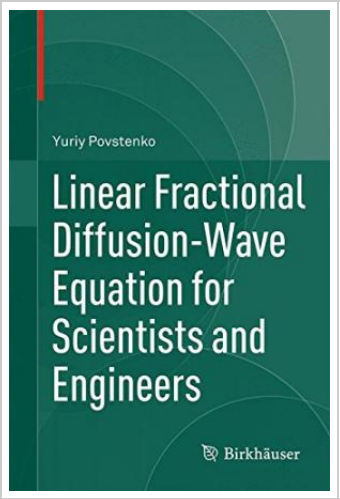

Linear Fractional Diffusion-Wave Equation for Scientists and Engineers

By Yuriy Povstenko

BirkhÃ¤user. Hardcover. Condition: New. 490 pages. This book systematically presents solutions to the linear time-fractional diffusion-wave equation, which describes different physical phenomena and interpolates the Helmholtz equation and the classical diffusion equation, on the one hand, and the standard diffusion equation and the wave equation on the other. It introduces the integral transform technique and discusses the properties of the Mittag-Leffler, Wright, and Mainardi functions that appear in the solutions. The time-nonlocal dependence between the flux and the gradient of the transported quantity with the long-tail power kernel results in the time-fractional diffusion-wave equation with the Caputo fractional derivative. Time-nonlocal generalizations of classical Fouriers, Ficks and Darcys laws are considered and different kinds of boundary conditions for this equation are discussed (Dirichlet, Neumann, Robin, perfect contact). The book provides solutions to the fractional diffusion-wave equation with one, two and three space variables in Cartesian, cylindrical and spherical coordinates. The respective sections of the book can be used for university courses on fractional calculus, heat and mass transfer, transport processes in porous media and fractals for graduate and postgraduate students. The volume will also serve as a valuable reference guide for specialists working in applied mathematics, physics, geophysics and the engineering...

Reviews

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This sort of book is everything and taught me to seeking forward and more. This really is for those who statte there had not been a well worth reading. I found out this pdf from my i and dad advised this book to discover.

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