



1st ed. 2019, XVIII, 334 p. 144 illus., 51 illus. in color.

Printed book

Hardcover

129,99 € | £109.99 | \$159.99

^[1]139,09 € (D) | 142,99 € (A) | CHF 153,50

eBook

106,99 € | £87.50 | \$119.00

^[2]106,99 € (D) | 106,99 € (A) | CHF 122,50

Available from your library or springer.com/shop

MyCopy ^[3]

Printed eBook for just

€ | \$ 24.99

springer.com/mycopy

Ryszard Staroszczyk

Ice Mechanics for Geophysical and Civil Engineering Applications

Series: GeoPlanet: Earth and Planetary Sciences

- Reviews recent findings in the fields of sea and grounded polar ice modelling
- Discusses the problems of the elastic, viscous, visco-plastic and brittle behaviour of ice on a wide range of spatial scales
- Includes theoretical descriptions and simulations of the material behaviour of ice

This book presents the concepts and tools of ice mechanics, together with examples of their application in the fields of glaciology, climate research and civil engineering in cold regions. It starts with an account of the most important physical properties of sea and polar ice treated as an anisotropic polycrystalline material, and reviews relevant field observations and experimental measurements. The book focuses on theoretical descriptions of the material behaviour of ice in different stress, deformation and deformation-rate regimes on spatial scales ranging from single ice crystals, those typical in civil engineering applications, up to scales of thousands of kilometres, characteristic of large, grounded polar ice caps in Antarctica and Greenland. In addition, it offers a range of numerical formulations based on either discrete (finite-element, finite-difference and smoothed particle hydrodynamics) methods or asymptotic expansion methods, which have been used by geophysicists, theoretical glaciologists and civil engineers to simulate the behaviour of ice in a number of problems of importance to glaciology and civil engineering, and discusses the results of these simulations. The book is intended for scientists, engineers and graduate students interested in mathematical and numerical modelling of a wide variety of geophysical and civil engineering problems involving natural ice.

Order online at springer.com / or for the Americas call (toll free) 1-800-SPRINGER / or email us at: customerservice@springernature.com. / For outside the Americas call +49 (0) 6221-345-4301 / or email us at: customerservice@springernature.com.

The first € price and the £ and \$ price are net prices, subject to local VAT. Prices indicated with [1] include VAT for books; the €(D) includes 7% for Germany, the €(A) includes 10% for Austria. Prices indicated with [2] include VAT for electronic products; 19% for Germany, 20% for Austria. All prices exclusive of carriage charges. Prices and other details are subject to change without notice. All errors and omissions excepted. [3] No discount for MyCopy.

