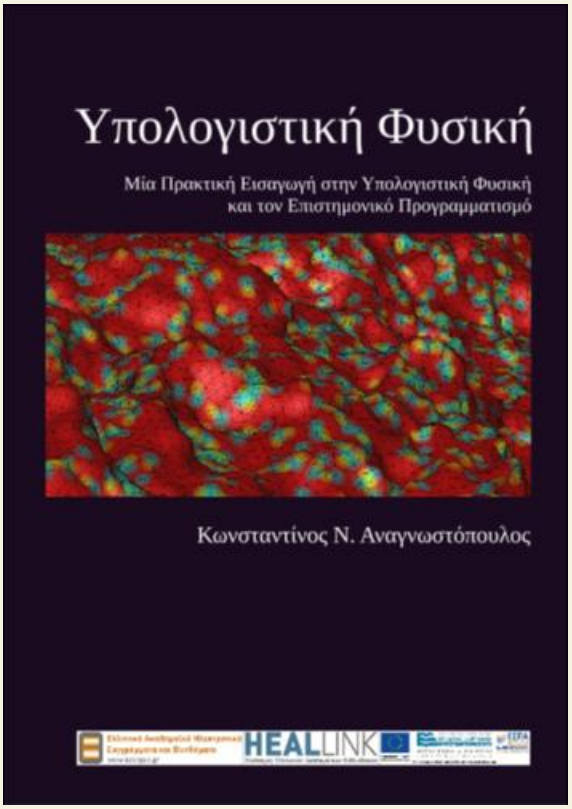

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Abstract

The book fills a much-needed gap in Greek scientific literature in the field of introductory scientific programming for engineers and scientists. It is based on three courses that the author has established and taught since 2004 at the National Technical University of Athens and is mainly adressed to third- and fourth-year undergraduate students in science and engineering. The first chapters can be taught without difficulty to fourth-semester students. Emphasis is placed on programming from the outset, on analysis, and on the scientific interpretation of results in a practical manner and through learning by experience. The selection of problems and software emphasizes the training of those who will be involved in high-performance computing problems, with the aim of exposing the reader as much as possible to a wide a range of scientific programming directions. The book consists of 13 chapters covering a wide range of interesting physical problems. Most of the theory is already familiar to the reader from introductory physics courses. The book presents all the necessary introductory material and provides references for further study where necessary. The chapters end with exercises of varying difficulty. It also comes with software containing all the code presented in the book, as well as additional programs for practice. Everything presented in the book requires only free software.

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