

T.GVELESIANI**Monograph: "THEORY OF WAVE GENERATION IN APPLICATION TO THE HYDRO-ECOLOGICAL PROBLEMS"****Tbilisi. "Universal". 2009. 246 p. (in Russ)**

The mentioned monograph was written by the well-known scientist Prof. Teimuraz Gvelesiani by the order of "Seambiotic", a company of Israel, first in Russian language and then was translated into English and published in Israel under the title "Mathematical models of transient waves generation in environment protection problems", Tel-Aviv, 2010, which proves the topicality and great importance of the problems considered in the book.

The book is dedicated to theoretical aspects of geometrical and kinematic characteristics prognostication of periodically repeated (harmonious), as well as, transient wave processes. The generation of these processes is conditioned with the effect of different wave-generators in specific water area, both in artificial and natural conditions. In the first case waves are generated in hydraulic flumes, ponds etc. under the action of special hydraulic mechanisms (wave generators) and in the second case – in various water basins (including resevoirs). In this process the role of wave generators is performed by such natural (elemental) phenomena as earthquakes, landslide, etc. The prognosis of the mentioned extreme waves is necessary especially in emergency situations with the aim to provide safety of population living in the region of hydroworks and of environment ecological balance, also for physical modeling of hydro-technical, including bank protection constructions, also for biofuel production from underwater micro vegetation, etc.

The book presents new mathematical models and respective methods of prognosis made on the basis of analytical solution of the respective tasks of mathematical physics previously elaborated by the author. In a number of cases the advantage of this method compared to numerical methods is mainly that the results of computer calculations are exact (do not need further testing and correcting) and calculations are performed in a short time. Thus, the method used for the solution of prognosis tasks considered in the book showed its effectiveness. The same opinion is expressed in the preface of the book (English version) by Doctor Arnon Chait, senior scientist of scientific research center of US NASA. "The approach proposed in the presented monograph by Prof. T.Gvelesiani presents classical and, at the same time, powerful method which allows to perform precise computer calculation of great amplitude waves for wide application purposes, the text of the book is written quite in details so that the specialists of this sphere be aware of physical and mathematical aspects of the presented analytical solutions, as well as, the essence of the received practical results obtained on the basis of these solutions".

In the book the results of different computer calculations are illustrated with numerous diagrams. The examples of calculations are given apart for each chapter (10 chapters in all).

The original results obtained in the book have important theoretical and practical value. They will be used by governmental and nongovernmental organizations, scientists and engineer-specialists dealing with the provision of hydrotechnical works construction and environment protection in mountain and seismically active regions, also by high school master and doctoral candidates.

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