

**BOOK's Announce:**

**“METHOD OF FRACTIONAL DERIVATIVES” <sup>1</sup>**

**By Vladimir V. Uchaikin**

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**In RUSSIAN**

**ANNOTATION**

The first derivative means a velocity, the second one is an acceleration, but what is about the derivative of a non-integer (fractional) order? What does it mean? Where does it come from? How does it work? The new book of the Russian Professor V.V. Uchaikin answers these questions.

The book consists of three parts, the first of which discovers a physical basement of the method, the second equips the reader with the corresponding mathematical tools and the third demonstrates application of the method to various fields of physics: mechanics and hydrodynamics, viscoelasticity and thermodynamics, physics of dielectrics and semiconductors, electrical engineering and plasmas physics, nanophysics and physics of cosmos. The book is supplied with an inquiry mathematical appendix and an extensive bibliography showing the wide penetration of the fractional calculus into the modern physics and engineering. The book is written on a high pedagogical level and is original not only in form (the fractional operators are “deduced” from the consideration of physical processes) but in contents as well (a very wide panorama of applications of the method is expanded). Reading the book, the reader goes into the concepts of hereditary (memory), of non-Gaussian Levy stable and fractionally stable stochastics, of fractals and other modern ideas. Understanding the links between these notions and fractional differentiation will serve as a powerful impetus for the reader to realize his creative ideas.

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The book is addressed to wide range of readers: to students of mathematical, physical and engineering specialties, to specialists in numerical methods and mathematical modeling, and to that professors and researchers, who consider the fractional calculus as some exotic thing.

"Fractional calculus has deep and natural connections with many fields of applied mathematics. I would like to mention just an example. By studying the fractional diffusion equation, you will become acquainted with the theory of pseudo-differential operators as well as with important aspects of the theory of stochastic processes" (Enrico Scalas).

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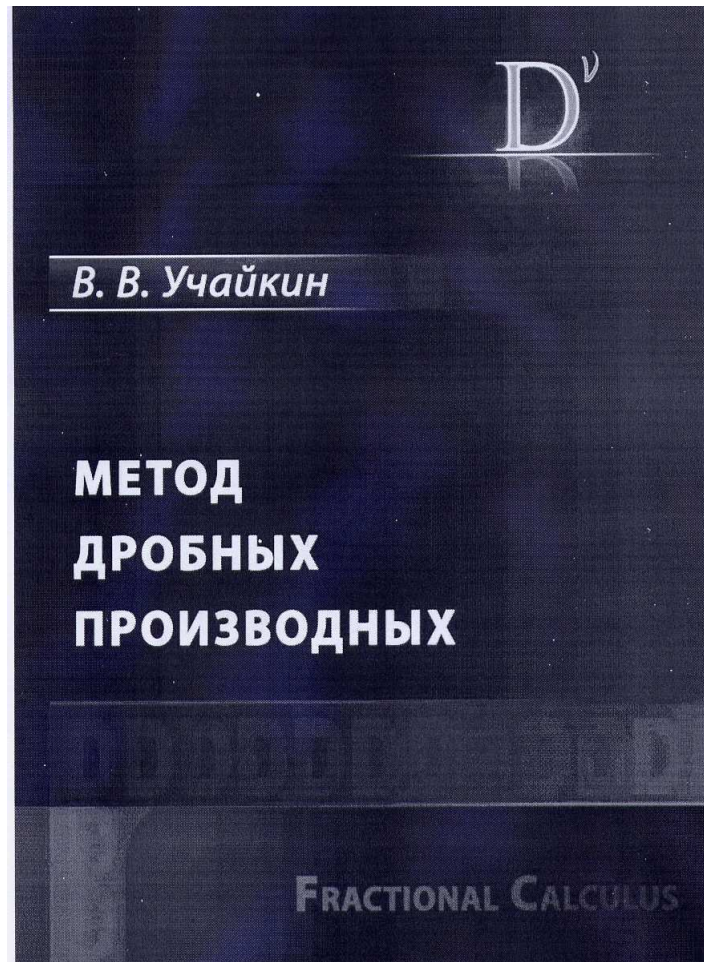
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