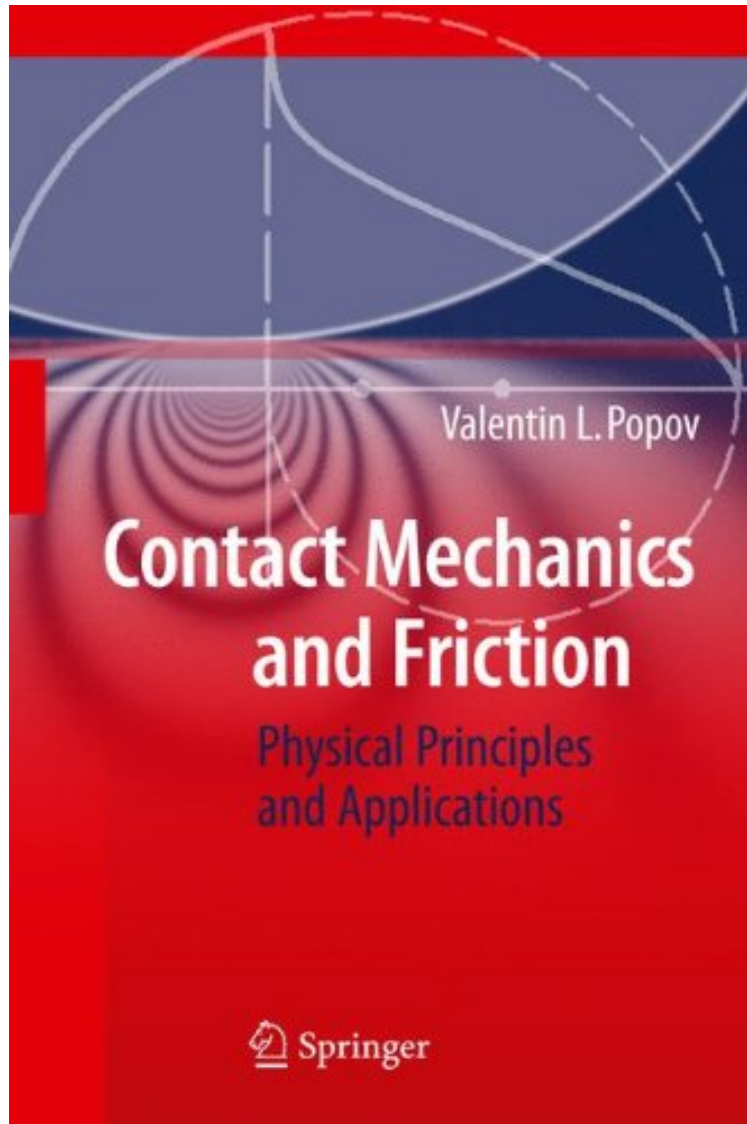


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Contact Mechanics and Friction: Physical Principles and Applications

Valentin L. Popov

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Valentin L. Popov : Contact Mechanics and Friction: Physical Principles and Applications before purchasing it in order to gauge whether or not it would be worth my time, and all praised Contact Mechanics and Friction: Physical Principles and Applications:

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Helped me on my research.

The English edition of Contact Mechanics and Friction lying before you is, for st the most part, the text of the 1 German edition (Springer Publishing, 2009). The book was expanded by the addition of a chapter on frictional problems in ear- quake research. Additionally, Chapter 15 was supplemented by a section on elasto-hydrodynamics. The problem sections of several chapters were enriched by the addition of new examples. This book would not have been possible without the active support of J. Gray, who translated it from the German edition. I would like to thank Prof. G. G. - charyan and Prof. S. Sobolev for discussions and critical comments on the chapter over earthquake dynamics. Dr. R. Heise made significant contributions to the - velopment and correction of new problems. I would like to convey my affecti- ate thanks to Dr. J. Starcevic for her complete support during the composition of this book. I want to thank Ms. Ch. Koll for her patience in creating figures and Dr. R. Heise, M. Popov, M. He, S. Krscher, and B. Grzembra for their help in pro- reading. Berlin, November 2009 V.L. Popov Preface to the German Edition

From the reviews:Popov puts a reader equipped with good intuition into a position to tackle quite a few tribological problems in a semi-quantitative fashion. The book is organized extremely well . The large number of solved problems at the end of each chapter is a definite advantage of the book. great benefit to those who teach tribology. Meaningful references are provided for those who want to refine the material as a teacher or to indulge in tribological research. (Martin Mser, Tribology Letters, July, 2010)"This book is clearly written, excellently illustrated, and therefore, can be used also by scientists specializing in biological surface science, biomechanics, experimental biology, and biomimetics. These scientists will find concise and precise models that aid quantitative description of surface phenomena in biology. The chapters of the book illustrate a few examples of contact problems in biology and give numerous examples of applications in contact mechanics to these kinds of problems (p. 25, p. 39, p. 48, etc.). Anyone who is doing research on biological contact problems or those who are particularly interested in the friction/adhesion phenomena in biology will find this book an excellent reference for its quantitative approach to these types of problems. Since the book provides worked solutions at the end of each individual chapter, it might serve as a very good extension to biomechanics courses."References (<http://creativecommons.org/licenses/by/2.0>), doi:10.3762/bjnano.2.7In twenty chapters the author investigates the most important aspects of contact mechanics, including adhesion and capillarity, the theory of friction on a macroscale . This book also offers an overview of methods of numerical simulation for contact mechanics and friction. Many special cases are presented alongside the general formulations with this goal in mind. These cases are presented as exercises in the corresponding chapters. The solutions are provided for every exercise, along with a short explanation and results. (Nicolae Pop, Zentralblatt MATH, Vol. 1193, 2010)From the Back CoverThis application-oriented book introduces the associations between contact mechanics and friction and with it offers a deeper understanding of tribology. It deals with the associated phenomena of contact, adhesion, capillary forces, friction, lubrication, and wear from one consistent viewpoint. The author goes into (1) methods of rough estimation of tribological quantities, (2) methods for analytical calculations which attempt to minimize the necessary complexity, (3) the crossover into numerical simulation methods. With these methods the author conveys a consistent view of tribological processes in various scales of magnitude (from nanotribology to earthquake research). Also, system dynamic aspects of tribological systems, such as squeal and its suppression as well as other types of instabilities and spatial patterns are investigated. This book contains problems and worked solutions for individual chapters in which the reader can apply the theory to practical situations and deepen the understanding of the material.