BOOK REVIEW

Elasticity and Geometry: *From Hair Curls to the Nonlinear Response of Shells*, by Basile Audoly and Yves Pomeau, Oxford University Press, Oxford 2010, x + 586 pages, ISBN: 978-0-19-850625-6.

The authors, Basile Audoly (Research Fellow at CNRS, Paris) and Yves Pomeau (Senior Researcher Emeritus at CNRS, Professor Emeritus of Mathematics at the University of Arizona and Corresponding Member of the French Academy of Sciences) are well-known scientists working actively in the field of mechanics of solids and fluids. In the book under review, they have caught the renewed growing interest in the exploration of the mechanical behaviour of slender and thin elastic objects, such as rods, plates and shells, among the researchers from engineering, mathematics and physics communities.

The book combines the features of a graduate-level textbook and a research monograph.

As a textbook, it offers a self-contained introduction to the theory of elastic rods, plates and shells emphasising on the application of the classical differential geometry of curves and surfaces in the description of the mechanical response of these slender or thin solid bodies. In this capacity, the book is needer intended, nor can serve as a comprehensive treatise on the subject. For that purpose, the interested reader is referred to the excellent books [1, 3, 4]. As the authors notice in the Introduction, "no prior knowledge of elasticity theory is required", but "basic understanding of Euclidean geometry and of calculus with real variables is assumed". The reader can find all needed knowledge of calculus of variation and geometry of curves and surfaces either throughout the main text of the book or in the Appendices.

As a research monograph, the book provides a survey of a wide variety of resent developments concerning the mechanics of human hair, rippled leaves, uncoiled springs, end effects in plate buckling, finite amplitude buckling of strips, crumpled paper and fractal buckling near edges and many others. The majority of the reported results have appeared previously only in journal publications to which the authors have contributed significantly. Most of the presented solutions of the considered particular problems are obtained in explicit form by applying classical analysis, bifurcation theory and other techniques of nonlinear analysis. It should be