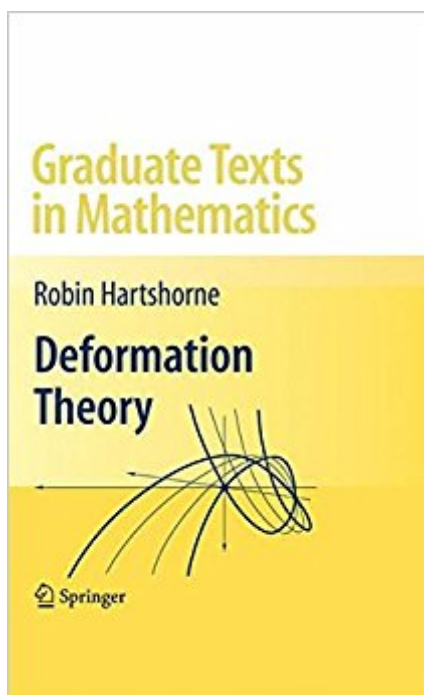


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Deformation Theory (Graduate Texts In Mathematics)



Synopsis

The basic problem of deformation theory in algebraic geometry involves watching a small deformation of one member of a family of objects, such as varieties, or subschemes in a fixed space, or vector bundles on a fixed scheme. In this new book, Robin Hartshorne studies first what happens over small infinitesimal deformations, and then gradually builds up to more global situations, using methods pioneered by Kodaira and Spencer in the complex analytic case, and adapted and expanded in algebraic geometry by Grothendieck. The author includes numerous exercises, as well as important examples illustrating various aspects of the theory. This text is based on a graduate course taught by the author at the University of California, Berkeley.

Book Information

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Customer Reviews

From the reviews: “Robin Hartshorne is the author of a well-known textbook from which several generations of mathematicians have learned modern algebraic geometry since it first appeared in 1977. This introduction to deformation theory is based on his notes for a course he taught in 1979. The mathematical community has to thank him for updating and expanding them into this book. This volume is an important addition to the literature and will help new generations to acquire its subject.” (Ch. Baxa, Monatshefte für Mathematik, Vol. 169 (1), January, 2013) “Deformation theory is the study of the behaviour of a family of algebraic geometric objects, such as schemes or coherent sheaves, near a given element. The book

is recommended for advanced graduate students and researchers in algebraic geometry who want to learn deformation theory. The book is clearly written, the abstract material is illustrated by examples where appropriate and there are exercises dealing with concrete geometrical problems at the end of each section. (Gábor Megyesi, *The Mathematical Gazette*, Vol. 96 (537), November, 2012) “In the development of algebraic deformation theory, a graduate text explaining the fundamentals of the theory had been lacking. So, eventually, somebody made the effort and wrote down the essentials. Happily this somebody is Robin Hartshorne. The precise formulation and good language make the book capture the audience. a fundamental text for anybody who wants to learn deformation theory. Also, a lot of relevant references are included. (Arvid Siqveland, *Mathematical Reviews*, Issue 2011 c) “Deformation theory is a ubiquitous subject: From the Taylor expansion in Calculus to the deformation of Galois representations. Since deformation theory could be considered a central topic in algebraic geometry textbook where some of the main results and methods are collected in one place is certainly welcome. inclusion of exercises and plenty of examples, make this book suitable for a course on this topic or for self-study, with the only prerequisite the now standard textbook on Algebraic Geometry by the same author. (Felipe Zaldivar, *The Mathematical Association of America*, March, 2010) “No doubt, this masterly written book gives an excellent first introduction to algebraic deformation theory, and a perfect motivation for further, more advanced reading likewise. It is the author’s masterful style of expository writing that makes this text particularly valuable for seasoned graduate students and for future researchers in the field. The list of 177 references at the end of the book, which the author frequently refers to throughout the text, is another special feature of the volume under review. (Werner Kleinert, *Zentralblatt MATH*, Vol. 1186, 2010)

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stable vector bundles. The author includes numerous exercises, as well as important examples illustrating various aspects of the theory. This text is based on a graduate course taught by the author at the University of California, Berkeley.

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