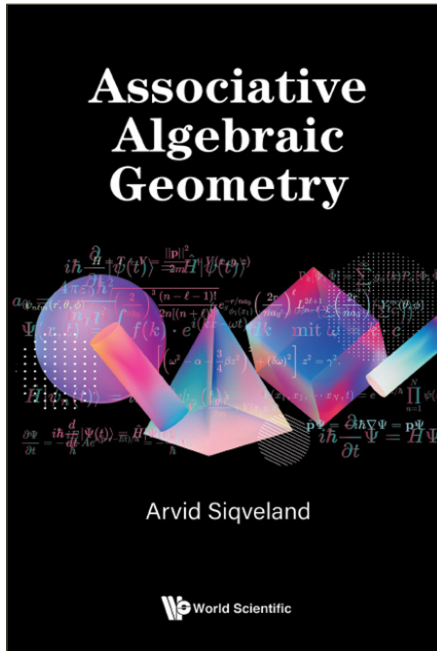


Associative Algebraic Geometry



By Arvid Siqveland
(University of South-Eastern, Norway)

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ABOUT THE BOOK

Classical Deformation Theory is used for determining the completions of local rings of an eventual moduli space. When a moduli variety exists, the main result explored in the book is that the local ring in a closed point can be explicitly computed as an algebraization of the pro-representing hull, called the local formal moduli, of the deformation functor for the corresponding closed point.

The book gives explicit computational methods and includes the most necessary prerequisites for understanding associative algebraic geometry. It focuses on the meaning and the place of deformation theory, resulting in a complete theory applicable to moduli theory. It answers the question “why moduli theory”, and gives examples in mathematical physics by looking at the universe as a moduli of molecules, thereby giving a meaning to most noncommutative theories.

The book contains the first explicit definition of a noncommutative scheme, not necessarily covered by commutative rings. This definition does not contradict any previous abstract definitions of noncommutative algebraic geometry, but sheds interesting light on other theories, which is left for further investigation.

READERSHIP

The target readership is graduate mathematicians, and it can be used as a textbook for graduate courses in algebra/algebraic geometry. The examples are good foundations for master and PhD theses. Can also be adopted to differential geometry and algebraic topology / K-theory and can be adopted to the recommended reading lists in such courses.

CONTENTS

- Introduction
- Basic Introduction to Associative Moduli
- Associative Algebra
- Associative Varieties I
- Noncommutative Deformation Theory
- Associative Varieties II
- Computational Examples of Associative Varieties
- Algebraic Invariant Theory
- Pre-Dynamic GIT
- Dynamical Algebraic Structures

ABOUT THE AUTHOR

Arvid Siqueland, Cand. Scient. (Master) at University of Oslo 1990 under the supervision of O Arnfinn Laudal, Dr Scient. (PhD) at University of Oslo 1996 under the supervision of O Arnfinn Laudal. Siqueland has published a series of articles on deformation theory, half of them on noncommutative deformation theory. He has been on the editorial board of several East-European mathematical Journals and was very active in the Nordic Baltic Algebraic Geometry and Mathematical Physics cooperation (AGMP) during his period as a Dean for the Faculty of Engineering and Natural Sciences at USN from 2006–2014. He was one of the authors of the book *Noncommutative Deformation Theory* published in 2017, and in 2021, O Arnfinn Laudal published the book *Mathematical Models in Science* which Siqueland helped in editing. This was when he understood that there was a missing link between deformation theory and mathematical models, and that this link was a noncommutative algebraic geometry.

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