



Audun Holme

# A Royal Road to Algebraic Geometry

- **Compact exposition:** Self contained introduction to algebraic curves in 5 chapters, complete exposition of foundations from category theory in 3 chapters and modern algebraic geometry in 14 chapters
- **Detailed exposition:** Proofs, or the essential parts of proofs, are included for all major theorems given
- **Numerous illustrations**

This book is about modern algebraic geometry. The title *A Royal Road to Algebraic Geometry* is inspired by the famous anecdote about the king asking Euclid if there really existed no simpler way for learning geometry, than to read all of his work *Elements*. Euclid is said to have answered: "There is no royal road to geometry!" The book starts by explaining this enigmatic answer, the aim of the book being to argue that indeed, in some sense there is a royal road to algebraic geometry. From a point of departure in algebraic curves, the exposition moves on to the present shape of the field, culminating with Alexander Grothendieck's theory of schemes. Contemporary homological tools are explained. The reader will follow a directed path leading up to the main elements of modern algebraic geometry. When the road is completed, the reader is empowered to start navigating in this immense field, and to open up the door to a wonderful field of research. The greatest scientific experience of a lifetime!

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