

Hilbert, David

Theory of algebraic invariants. Lectures. Transl. by R. C. Laubenbacher, ed. and with an introduction by Bernd Sturmfels. (English) [Zbl 0801.13001](#)

[Cambridge Mathematical Library](#). Cambridge: Cambridge University Press.,. xiv, 192 p. (1993).

The invariant theory goes back to *J. Lagrange* (“Recherches d’arithmetique”, Berlin 1775) and to *C. F. Gauss* (“Disquisitiones arithmeticae”, Lipsiae 1801) in connection with the theory of binary quadratic forms. Further progress in the invariant theory was motivated by projective geometry (*J. V. Poncelet*, *A. F. Möbius*, *M. Chasles*, *J. Plücker*, *J. Steiner*). Traditionally beginnings of the invariant theory are connected with *A. Cayley* and *J. J. Sylvester*. The fundamental notions of the theory, such as invariant, covariant etc. are introduced by Sylvester. Invariant theory and elliptic functions are the most important parts of mathematics in the second half of the nineteenth century. The famous finiteness problem for invariants, conjectured and proved in some particular cases, was solved completely by the author in 1890 (papers in 1890 and 1893). The solution was brilliant and unexpected. In the words of Herrmann Weyl: “Hilbert almost killed this theory”.

The book under review is based on the handwritten course notes taken by Hilbert’s student Sophus Marxen in 1897. It was a very good idea to publish this notes. The book is interesting not only for historians of mathematics, but also for mathematicians interested in classical mathematics. The editors should be congratulated for the publication. Mathematical community is looking forward to other classical titles in this series.

Reviewer: [W. Więśław \(Wrocław\)](#)

MSC:

- [13A50](#) Actions of groups on commutative rings; invariant theory
- [01A55](#) History of mathematics in the 19th century
- [13-03](#) History of commutative algebra
- [15-03](#) History of linear algebra
- [15A72](#) Vector and tensor algebra, theory of invariants
- [01A75](#) Collected or selected works; reprintings or translations of classics

Cited in **2** Reviews
Cited in **46** Documents

Keywords:

[binary quadratic forms](#); [invariant theory](#); [covariant](#)