

Fulton, William

Young tableaux. With applications to representation theory and geometry. (English)

Zbl 0878.14034

London Mathematical Society Student Texts. 35. Cambridge: Cambridge University Press. ix, 260 p. (1997).

Young tableaux are well studied in representation theory and combinatorics [see the classic books: *G. James* and *A. Kerber*, “The representation theory of the symmetric group” (1981; Zbl 0491.20010) or *G. E. Andrews*, “The theory of partition” (1976; Zbl 0371.10001)]. The well-known author gives the definitions and main theorems in these fields. But his main emphasis is on the application of Young tableaux in (algebraic) geometry. Defining equations for Grassmannians and flag varieties are given. We find Schubert varieties in flag manifolds, Chern classes are introduced, and the geometry of flag varieties is used to construct the Schubert polynomials of Lascoux and Schützenberger. The basic facts about intersection theory on Grassmannians are given, proofs at some times are delegated to the standard books of *R. Hartshorne* [“Algebraic geometry” (3rd edition 1983; Zbl 0531.14001)] and *I. R. Shafarevich* [“Basic algebraic geometry. I and II” (2nd edition 1994; Zbl 0797.14001 and Zbl 0797.14002)] on algebraic geometry. The wealth of presented material makes this excusable.

There are numerous exercises with answers in each chapter and a lot of references to be found at the end of the book.

Reviewer: [B.Richter \(Berlin\)](#)

MSC:

- 14M15 Grassmannians, Schubert varieties, flag manifolds
- 05E10 Combinatorial aspects of representation theory
- 14-02 Research exposition (monographs, survey articles) pertaining to algebraic geometry
- 20-02 Research exposition (monographs, survey articles) pertaining to group theory
- 05-02 Research exposition (monographs, survey articles) pertaining to combinatorics
- 20C30 Representations of finite symmetric groups
- 20C33 Representations of finite groups of Lie type
- 22E45 Representations of Lie and linear algebraic groups over real fields: analytic methods

Cited in **12** Reviews
Cited in **598** Documents

Keywords:

Young tableau; Grassmannian; Schubert polynomials