Povzetek

V delu je predstavljena teorija invariant končnih grup. Obravnavane so naslednje teme: končna generiranost kolobarja invariant; Molienova funkcija; dekompozicija kolobarja invariant in s tem povezane primarne in sekundarne invariante. Poudarek je na algoritmu za računanje primarnih in sekundarnih invariant. Osnovno orodje v tem algoritmu so Gröbnerjeve baze. Uporabljene so pri preverjanju vsebovanosti v idealu, pri preverjanju vsebovanosti v radikalu, pri eliminaciji spremenljivk, pri preverjanju algebraične odvisnosti polinomov, pri računanju dimenzije ideala, pri normalizaciji in pri računanju primarnih in sekundarnih invariant. Algoritem za računanje primarnih in sekundarnih invariant je uporabljen na primeru iz teorije kodiranja.

Math. Subj. Class. (1991): 13A50, 13P10, 68Q40.

Key words: Gröbner bases, dimension of ideals, normalization lemma, invariant theory, graded rings, Molien function, Cohen–Macauley rings.

Literatura

[1] William A. Adkins, Steven H. Weintraub: *Algebra, An Approach via Module Theory*, Graduate Texts in Mathematics, vol. 136. Springer, Berlin-Heidelberg-New York-Tokyo, 1992.

[2] Thomas Becker, Volker Weispfenning, Heinz Kredel: *Gröbner Bases, A Computational Approach to Commutative Algebra*, Graduate Texts in Mahematics, vol. 141. Springer, Berlin-Heidelberg-New York-Tokyo, 1993.

[3] David Cox, John Little, Donal O'Shea: *Ideals, Varieties and Algorithms.* Undergraduate texts in mathematics. Springer, Berlin-Heidelberg-New York-Tokyo, 1992.

[4] Larry C. Grove: *Algebra.* Pure and applied mathematics. Academic Press, New York-London, 1983.

[5] Larry C. Grove, Clark T. Benson: *Finite Reflection Groups*, Graduate texts in mathematics, vol. 99. Springer, New York-Berlin-Heidelberg-Tokyo. 2nd edition, 1985.

[6] George R. Kempf: Computing invariants. V Sebastian S. Koh, ur., *Invariant Theory, Lecture Notes in Mathematics*, vol. 1278, str. 81–94. Springer, Berlin-Heidelberg-New York-London-Paris-Tokyo, 1987.

[7] Ernst Kunz: *Introduction to Commutative Algebra and Algebraic Geometry.* Birkhäuser, Boston, 1985.

[8] Alessandro Logar: A computational proof of the Noether normalization lemma. V T. Mora, ed., *Applied Algebra, Algebraic Algorithms, and Error-Correcting Codes. AAECC-6, Lecture Notes in Computer Science*, vol. 357, str. 259–273. Springer, Berlin-Heidelberg- New York-Tokyo, 1988.

[9] N.J.A. Sloane: Error-correcting codes and invariant theory: new applications of a nineteenth-century technique. *Am. Math. Mothly*, 84:82–108, 1977.

[10] Bernd Sturmfels: *Algorithms in Invariant Theory.* RISC Series in Symbolic Computation. Springer, New York-Berlin-Heidelberg, 1993.

[11] Bernd Sturmfels, Neil White: Computing combinatorial decompositions of rings. *Combinatorica*, 11(3):275–293, 1991.

[12] Ivan Vidav: *Algebra*, Matematika-Fizika 4. DMFA, Ljubljana, 4 izdaja, 1989.

[13] Stephen Wolfram: *Mathematica, A System for Doing Mathematics by Computer.* Addison-Wesley Publishing Co., Redwood City, California, 2nd edition, 1991.

[14] Oscar Zariski, Pierre Samuel: *Commutative Algebra*, Vol. I. Van Nostrand Company Inc., Princeton-New Jersey-Toronto-New York-London, 1958.