Arithmetic Nullstellensätze and Applications

Required background

- [CLO97]: Chapter 1, Geometry, Algebra and Algorithms and Chapter 8, Projective Algebraic Geometry, Paragraphs 1 and 2
- [Lan02]: Chapter II, Rings.

Related material

[Mac94], [Hei83], [Sha94], [Phi95], [CLO98], [DP99], [Wal04], [Jel05], [Bus07], [BBK09], [BGKS12] and [DKS13].

REFERENCES

[BBK09]   E. Bombieri, J. Bourgain, and S. V. Konyagin. Roots of polynomials in subgroups of $\mathbb{F}_p^*$ and applications to congruences. *Int. Math. Res. Not. IMRN*, (5):802–834, 2009.

[BGKS12] Jean Bourgain, Moubariz Z. Garaev, Sergei V. Konyagin, and Igor E. Shparlinski. On the hidden shifted power problem. *SIAM J. Comput.*, 41(6):1524–1557, 2012.

[Bus07]   Laurent Busé. *Résultant univarié et courbes algébriques planes*. Master, Université de Nice Sophia-Antipolis. 2007.

[CLO97]   David Cox, John Little, and Donal O'Shea. *Ideals, varieties, and algorithms*. Undergraduate Texts in Mathematics. Springer-Verlag, New York, second edition, 1997. An introduction to computational algebraic geometry and commutative algebra.

[CLO98]   David Cox, John Little, and Donal O'Shea. *Using algebraic geometry*, volume 185 of *Graduate Texts in Mathematics*. Springer-Verlag, New York, 1998.

[DKS13]   Carlos D'Andrea, Teresa Krick, and Martín Sombra. Heights of varieties in multiprojective spaces and arithmetic Nullstellensätze. *Ann. Sci. Éc. Norm. Supér. (4)*, 46(4):549–627 (2013), 2013.

[DP99]   Sinnou David and Patrice Philippon. Minorations des hauteurs normalisées des sous-variétés des tores. *Ann. Scuola Norm. Sup. Pisa Cl. Sci. (4)*, 28(3):489–543, 1999.

[Hei83]   Joos Heintz. Definability and fast quantifier elimination in algebraically closed fields. *Theoret. Comput. Sci.*, 24(3):239–277, 1983.

[Jel05]   Zbigniew Jelonek. On the effective Nullstellensatz. *Invent. Math.*, 162(1):1–17, 2005.

[Lan02]   Serge Lang. *Algebra*, volume 211 of *Graduate Texts in Mathematics*. Springer-Verlag, New York, third edition, 2002.

[Mac94]   F. S. Macaulay. *The algebraic theory of modular systems*. Cambridge Mathematical Library. Cambridge University Press, Cambridge, 1994. Revised reprint of the 1916 original, With an introduction by Paul Roberts.

[Phi95]   Patrice Philippon. Sur des hauteurs alternatives. III. *J. Math. Pures Appl. (9)*, 74(4):345–365, 1995.

[Sha94]   Igor R. Shafarevich. *Basic algebraic geometry. 1*. Springer-Verlag, Berlin, second edition, 1994. Varieties in projective space, Translated from the 1988 Russian edition and with notes by Miles Reid.

[Wal04]   Michel Waldschmidt. Le théorème de bézout et le résultant de deux polynômes closed fields. *RMS*, 114(1):26–35, 2004.