ERRATA FOR LANG'S FUNDAMENTALS OF DIOPHANTINE GEOMETRY

COMPILED BY DINO LORENZINI

Lang's *Fundamentals of Diophantine Geometry* [6] is a classic in the field, published in 1983 as an expanded version of the earlier 1962 book *Diophantine geometry* [7]. This book is still a very important and a very useful contribution to the field. I am compiling here a list of known errata for it. Obviously, do not hesitate to communicate further errata to me, I would be glad to add them to this list.

Errata

Page 235, Lemma 3.2 in Chapter 9, see the discussion in the Notes on page 230 of [2].

Page 240, Proposition 5.2 in Chapter 9, requires further hypotheses to ensure that the element y in its proof exists (see [3], before 7.5).

Page 278, Lemma 3.2 in Chapter 11, the proof requires that the variety V/K be geometrically normal, or smooth (see [8], 2.2.4).

Addenda

Page ix, First paragraph, the conjecture on the number of integral points on an affine open subset of an abelian variety was solved by Faltings [1].

Page 226, Third paragraph, the open question has been solved (see 15.5.2 in [2], page 287).

Page 318, The notion of good completion of Néron models has been further studied, for instance in [4] and [5].

The survey http://arxiv.org/abs/0912.4325 contains an exposition of ideas and results related to Faltings' proof of the conjectures of Shafarevich, Tate and Mordell. This paper originally appeared in 1986 as an Appendix to the Russian translation of [6].

A historical side remark: in [7], page 162, Lang writes "It is unknown whether one can construct elliptic curves over the rationals such that the group of rational points has arbitrarily high rank. There is a general feeling that this cannot be done."

In [6], page 245, Lang writes "It is unknown whether one can construct elliptic curves over the rationals such that the group of rational points has arbitrarily high rank." The work of Lapin and Shafarevich-Tate "changed the attitude towards the problem over the rational numbers, leading to the expectation that the rank can also be arbitrarily high for elliptic curves over $\mathbb{Q}$."

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References

[1] G. Faltings, *Diophantine approximation on abelian varieties*, Ann. of Math. (2) **133** (1991), no. 3, 549576.

[2] M. Fried and M. Jarden, *Field arithmetic*, Third edition. Revised by Jarden. Ergebnisse der Mathematik und ihrer Grenzgebiete. 3. Folge. A Series of Modern Surveys in Mathematics, 11, Springer-Verlag, Berlin, 2008.

[3] O. Gabber, Q. Liu, and D. Lorenzini, *The index of an algebraic variety*, to appear in Inventiones Math.

[4] K. Künnemann, *Projective regular models for abelian varieties, semistable reduction, and the height pairing*, Duke Math. J. **95** (1998), no. 1, 161212.

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[6] S. Lang, *Fundamentals of diophantine geometry*, Springer-Verlag, New York, 1983.

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[8] C. Pépin, *Néron's pairing and relative algebraic equivalence*, to appear in Algebra and Number Theory.

Department of mathematics, University of Georgia, Athens, GA 30602, USA
E-mail address: lorenzin@uga.edu