

# COMPOSITIO MATHEMATICA

N. TZANAKIS

B. M. M. DE WEGER

**Corrections to “How to explicitly solve a  
Thue-Mahler equation”**

*Compositio Mathematica*, tome 89, n° 2 (1993), p. 241-242

[http://www.numdam.org/item?id=CM\\_1993\\_\\_89\\_2\\_241\\_0](http://www.numdam.org/item?id=CM_1993__89_2_241_0)

© Foundation Compositio Mathematica, 1993, tous droits réservés.

L'accès aux archives de la revue « Compositio Mathematica » (<http://http://www.compositio.nl/>) implique l'accord avec les conditions générales d'utilisation (<http://www.numdam.org/conditions>). Toute utilisation commerciale ou impression systématique est constitutive d'une infraction pénale. Toute copie ou impression de ce fichier doit contenir la présente mention de copyright.

NUMDAM

Article numérisé dans le cadre du programme  
Numérisation de documents anciens mathématiques

<http://www.numdam.org/>

## Corrections to “How to explicitly solve a Thue–Mahler equation”

N. TZANAKIS

*Department of Mathematics, University of Crete, Iraklion, Greece*

and

B.M.M. DE WEGER

*Econometric Institute, Erasmus University Rotterdam, Rotterdam, The Netherlands*

Received 10 May 1993; accepted 14 May 1993

In Appendix A3 of our paper we make use of Corollary 2 of [BGMMS]. This paper [BGMMS] contains a serious misprint, as was pointed out to us by Professor A. Baker, to whom we are grateful. Namely, from the lower bound for  $|\Lambda|$  in [BGMMS, Corollary 2] a rather substantial factor  $n^{2n+1}$  is missing, as was confirmed to us by the authors of [BGMMS]. As a consequence, our constant  $c_7$ , defined on p. 284, should be multiplied by  $m^{2m+1}$ .

It will be clear that a larger upper bound for  $B$  can be derived from the corrected result of [BGMMS], and that the general method of our paper is insensitive to the actual value of the constants. However, in any particular example the computations do of course depend on the correct value of the constants. Therefore we have to reconsider the details of our example, treated in the <sup>Ex</sup>-sections.

It follows that a correct value for  $c_7$  is  $7^{15}$  times the value given in the paper, thus  $c_7 = 1.08672 \times 10^{46}$ . We computed that with  $c_6 = 0.6$  this yields an optimal value for the upper bound for  $B$ , namely  $c_{\text{real}} < 1.511 \times 10^{50}$ . This is only slightly worse than the value given in Section 11<sup>Ex</sup>.

Fortunately the correct value for  $c_{\text{real}}$  is small enough to do the first  $p$ -adic and real reduction steps with the same lattices as used in the paper, i.e. without having to do any new computations. Namely, in Section 15<sup>Ex</sup> we now have  $K_0 = N_0 = 1.511 \times 10^{50}$ , and with  $W_1, \dots, W_6$ ,  $m$  unchanged the condition of Proposition 15 is again fulfilled in all cases, and hence  $N_1 = 1153$  still holds.

In Section 16<sup>Ex</sup> we now take  $K_0 = 1.511 \times 10^{50}$ , and  $N_1, W_1, \dots, W_5, C$  unchanged. Now  $R = 3.023 \times 10^{50}$ ,  $S = 6.591 \times 10^{100}$ , and with  $c_{16} = 0.0388479$  the condition of Proposition 16 is fulfilled in all cases. This leads

to  $H \leq 4919$ . Thus certainly the old bound  $H < 9.844 \times 10^{49}$  holds, and the reduction procedure as described in the paper shows that the gap in the proof has been fixed.

However, we can do even better. Namely, recently A. Baker and G. Wüstholz proved a new lower bound for linear forms in logarithms of algebraic numbers, which is considerably sharper than the one given in our Appendix A3. This result will be published shortly in [BW], and we are grateful to Professor Baker for communicating it to us.

Using this new result we found that we can take  $c_7 = 2.2044 \times 10^{38}$ ,  $c_8 = 0$ . This leads, by taking  $c_{16} = 10^{-9}$ , again to  $c_{\text{real}} < 9.844 \times 10^{49}$ , which is exactly the upper bound found in the paper. This shows that the reduction procedure as worked out in the Section 15<sup>Ex</sup> and 16<sup>Ex</sup> is in fact adequate to prove the main result on our particular Thue–Mahler equation.

Finally we note the following minor misprints:

- page 228, lines -3 and -6:  $|N \dots|$  should be  $|N \dots|_p$ ,
- page 283, lines -3 and -4: all  $\geq$  and  $\leq$  should be  $=$  symbols,
- page 286, line 3 below the table:  $2.289 \times 10^3$  should be  $2.289 \times 10^{33}$ .

## References

- [BGMMS] J. Blass, A.M.W. Glass, D.K. Manski, D.B. Meronk and R.P. Steiner: Constants for lower bounds for linear forms in logarithms of algebraic numbers II. The homogeneous rational case, *Acta Arithmetica* **55** (1990) 15–22.
- [BW] A. Baker and G. Wüstholz: Logarithmic forms and group varieties, *Journal für die reine und angewandte Mathematik*, (1993) to appear.