

SÉMINAIRE DELANGE-PISOT-POITOU. THÉORIE DES NOMBRES

T. N. SHOREY

Some applications of linear forms in logarithms

Séminaire Delange-Pisot-Poitou. Théorie des nombres, tome 17, n° 2 (1975-1976),
exp. n° 28, p. 1-2

http://www.numdam.org/item?id=SDPP_1975-1976__17_2_A4_0

© Séminaire Delange-Pisot-Poitou. Théorie des nombres
(Secrétariat mathématique, Paris), 1975-1976, tous droits réservés.

L'accès aux archives de la collection « Séminaire Delange-Pisot-Poitou. Théorie des nombres » 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/>

SOME APPLICATIONS OF LINEAR FORMS IN LOGARITHMS

by T. N. SHOREY

I shall mention some of the recent applications of linear forms in logarithms. All of them depend on the powerful results of BAKER [1] and van der POORTEN [3] on linear forms.

Denote by $P[r]$ the greatest prime factor of the integer r . Let a and b be non zero fixed integers. Van der POORTEN [2] proved that $P[ax^n + by^n]$ tends to infinity with n (> 1) uniformly in integers x, y with $(x, y) = 1$ and $\max(|x|, |y|) > 1$ (See also [4]). STEWART ([7], ch. 3) strengthened this to

$$P[ax^n + by^n] \gg \left(\frac{n}{\log n}\right)^{\frac{1}{2}}.$$

Here the constant implied by \gg depends only on a and b .

Let $m \geq 2$ be a fixed integer. In [5], it was shown that $P[ax^n + by^m]$ tends to infinity with n uniformly in integers x, y with $|x| > 1$ and $(x, y) = 1$. An explicit lower bound for $P[ax^n + by^m]$ was given recently by the author [6], namely

$$P[ax^n + by^m] \gg ((\log n)(\log \log n))^{\frac{1}{2}}.$$

Here $n \geq e^e$ and the constant implied by \gg depends only on a, b and m .

All the results mentioned above are effective. One can refer to [5]; it contains a survey of earlier results in this direction.

REFERENCES

- [1] BAKER (A.). - The theory of linear forms in logarithms, "Advances in transcendence theory". - London and New York, Academic Press, 1977.
- [2] POORTEN (A. J. van der). - Effectively computable bounds for the solutions of certain diophantine equations, Acta Arithm., Warszawa (to appear).
- [3] POORTEN (A. J. van der). - Linear forms in logarithms in the p -adic case, "Advances in transcendence theory". - London and New York, Academic Press, 1977.
- [4] SHOREY (T. N.) and TLJDEMAN (R.). - New applications of diophantine approximations to diophantine equations, Math. Scand. (to appear).
- [5] SHOREY (T. N.), POORTEN (A. J. van der), TLJDEMAN (R.) and SCHINZEL (A.). - Applications of the Gel'fond-Baker method to diophantine equations, "Advances in transcendence theory". - London and New York, Academic Press, 1977.

- [6] SHOREY (T. N.). - On the greatest prime factor of $(ax^m + by^n)$ (to appear).
- [7] STEWART (C. L.). - Divisor properties of arithmetical sequences, Phil. d. Thesis, University of Cambridge, 1976.

(Texte reçu le 8 décembre 1976)

T. N. SHOREY
School of Mathematics
Tata Institute of Fundamental Research
BOMBAY 5 (Inde)
