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T. N. SHOREY

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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.

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

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