

METRIC THEORY OF DIOPHANTINE APPROXIMATIONS.

V. Bernik (Minsk)

With use of methods of geometry of numbers one can prove that many inequalities have integer solutions. For example let $\bar{x} = (x_1, \dots, x_n) \in \mathbb{R}^n$. Then Minkowski theorem about linear forms states that the inequality

$$|a_n x_n + \dots + a_1 x_1 + a_0| < H^{-n}, \quad (1)$$

$\bar{a} = (0_0, a_1, \dots, a_n) \in \mathbb{Z}$, $H = \max_{1 \leq j \leq n} |a_j|$ has infinitely many solutions in vectors $\bar{a}$. inequality (1) is investigated not only for $\bar{x} \in \mathbb{R}^n$ but also for $\bar{x} \in G_m$ where G_m is a smooth manifold in $\mathbb{R}^n$ with dimension m , $1 \leq m \leq n$.

In 20–30-th of XX century Khintchine and Gromov constructed metric theory of inequalities of type (1) when $x \in \mathbb{R}$. they proved that for almost all $\bar{x}$ (in sense of Lebesgue measure in $\mathbb{R}^n$) the inequality (1) can be strengthened slightly. In the end of XX century the full analogue of Khintchine-Groshev theorem for non-degenerate manifolds G_m was proved.

In the report we will cite a new results about solvability of (1) for $\bar{x} \in G_m$ if the function in the left side of (1) is not linear.

REFERENCES

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