ERRATUM TO "BOUNDS ON THE COVERING RADIUS OF A LATTICE" [MATHEMATIKA 43 (1996), 159–164]

M. DEZA AND V. P. GRISHUKHIN

There is an error in our paper "Bounds on the covering radius of a lattice" published in this journal in 1996 (vol. 43, pp. 159–164). Theorem 1 of the paper should be corrected as follows.

THEOREM 1. *Let r_s and R_s be maximal radii of symmetric Delaunay polytopes of dimension less than n and of dimension n, respectively, in an n-dimensional lattice L. Let R be the covering radius of L. Then*

$$R \leqslant \frac{2}{\sqrt{3}} r_s$$

if L has no symmetric Delaunay polytopes of dimension n, and

$$R_s \leqslant R \leqslant \frac{2}{\sqrt{3}} \max(R_s, r_s),$$

otherwise.

(Note, that $r_s^2 = \frac{1}{4} u_{\max}$, $R_s^2 = \frac{1}{4} v_{\max}$, in the notations of our paper).

In fact, let c be the centre of a deep (*i.e.*, of radius R) Delaunay polytope of L. Let x be the nearest to c point of the lattice $\frac{1}{2}L$. Then, for the distance $d(c, x)$ between c and x, we have $d(c, x) \leqslant \frac{1}{2}R$. Obviously, $x \notin L$. Hence x is a centre of a symmetric Delaunay polytope P of the lattice L. If L has no symmetric Delaunay polytopes of dimension n, then dimension of P is less than n, and $R \leqslant (2/\sqrt{3}) r_s$. If L has a symmetric Delaunay polytope of dimension n, then P may be of dimension n, and $R_s \leqslant R \leqslant (2/\sqrt{3}) \max(R_s, r_s)$.

We leave the former assertion of Theorem 1 as Conjecture.

Professor M. Deza,
Départment de Mathématiques et
Laboratoire d'Informatique,
École Normale Supérieure,
45 rue d'Ulm,
75230 Paris, cedex 05,
France.

Professor V. Grishukhin,
CEMI RAN,
Academy of Sciences of Russia,
Krasikova 32,
Moscow 117418,
Russia.

11H31: *NUMBER THEORY; Geometry of numbers; Lattice packing and covering.*

Received on the 18*th of November*, 1997.