Some many-dimensional extremal geometric problems

Viacheslav Herasymov
(V.N.Karazin Kharkiv National University, School Mathematics and Computer Sciences, 4 Svobody Sq., Kharkiv, Ukraine)
E-mail: Slavka.gs98@gmail.com

Sergiy Gefter
(V.N.Karazin Kharkiv National University, School Mathematics and Computer Sciences, 4 Svobody Sq., Kharkiv, Ukraine)
E-mail: gefter@karazin.ua

Alexsey Arinenkov
(V.N.Karazin Kharkiv National University, School Mathematics and Computer Sciences, 4 Svobody Sq., Kharkiv, Ukraine)
E-mail: a.arinenkov@gmail.com

The talk deals with many-dimensional analogs of some classical two-dimensional and three-dimensional geometric problems on an extremum. The asymptotic behavior of parameters of extremal geometric objects with increasing dimension of the space is studied.

It is shown that in some extremal problems (such as in the problem of a cylinder of fixed volume with a minimum total surface area and the problem of the shape of a right circular cone with a maximum volume of an inscribed ball in it) these parameters do not depend on the dimension of the space.

References

[1] V. Alekseev, E. Galeev, V. Tikhomirov. Collection of optimization problems. Theory. Examples. Tasks. (in Russian) *Moscow, Physics and mathematics literature*, 2011.

[2] F. Vasiliev. Lectures on methods for solving extremal problems (in Russian). *Moscow, MSU*, 1974.