

PhD thesis research topic

Doctoral School of Mathematics and Computer Science, Budapest Univ. Techn.

Name of supervisor, research degree (in case of external supervisor also the data of the departmental supervisor):

Supervisor: Zsolt Lángi, PhD

The title of the PhD topic:

Extremum problems in geometry

Brief description of the task:

Geometric extremum problems; that is, looking for minimal and maximal values of a geometric quantity and configurations for which they are attained, have been in the focus of mathematical research since ancient Greece. Examples of such problems are all packing and covering problems, the long list of variants of the isoperimetric inequality and many other related inequalities in convex geometry, or problems in geometric graph theory and combinatorial geometry. Usually these problems have many applications in science from physics and engineering to computer science to medical sciences, and sometimes are even motivated by a real world phenomenon.

The aim of the PhD research is to deal with geometric extremum problems, or problems related to extremum problems. This work may have many different aspects depending on the knowledge, expertise and interest of the applicant. Among other things, it may include mathematical research on convex, discrete or combinatorial geometry problems, on the algorithmic or numeric aspects of these problems, or their applications.

Expectations for the applicant (e.g. knowledge of foreign languages, deeper knowledge of certain areas of mathematics, etc.):

The topic is geometrically motivated, with special regard to convex, discrete and combinatorial geometry. In addition to geometry, knowledge of analysis, linear algebra or combinatorics is an asset. People interested in programming and numeric computations are also welcome. Mainly the applications of students with mathematics or physics degree are expected.

Contact information of the supervisor (in case of external supervisor also the data of the departmental supervisor):

Research place (name of the department, in case of external supervisor also the name of the external research place): Department of Geometry

Declaration

The conditions for research in the suggested topic are satisfactory at the department, the announcement of the topic has been approved by the department head.