March 14, 2022

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Newton's aerodynamic problem: recent results and open questions

We will discuss the problem of finding the convex surface that has the smallest aerodynamic resistance when moving in a highly rarefied medium. The resistance is a surface integral of a function of the outward normal to the surface. The problem was first considered by I. Newton in 1687 in the class of axisymmetric surfaces. In the general case, it was stated in 1993 by the mathematicians Buttazzo and Kawohl and has not been completely solved until now. We will give a review of recent results. Special attention will be paid to the proof of the following statement obtained quite recently: all extreme points of an optimal surface are contained in the closure of the set of its singular points. In other words, if the closure of the set of singular points of the surface is removed, then the remaining part of the surface can be foliated by (non-degenerate) segments, and hence is developable.

SCIENTIFIC SEMINAR
"DIFFERENTIAL GEOMETRY AND APPLICATIONS"

headed by Academician of RAS Anatoly T. Fomenko

The seminar takes place online in ZOOM on Mondays
from 4:45 p.m. to 6:20 p.m. (Moscow time)
The zoom-ref is provided only to registered persons
To be registered, ask any participant of our seminar to endorse you
Announcements of previous talks can be found on the seminar website
`http://dfgm.math.msu.su/chairsem.php`