

Alexandrov-Fenchel type inequalities and hypersurface flows

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Abstract

The classical Alexandrov-Fenchel inequality is a crown jewel in convex geometry. It can be viewed as the optimal solution to isoperimetric problem for given two quermassintegrals associated to convex domains. A main question is the validity of such inequality for general domains or in other space forms. For example, one would like to establish an optimal relationship between total mean curvature and surface area for mean convex domains. We will discuss a hypersurface flow approach to the problem and discuss some recent progresses. The talk is for a general mathematical audience.