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*On the monotone properties of general affine surfaces under the Steiner symmetrization*

Affine surface areas are fundamental in (affine) convex geometry and play key roles in many problems such as affine isoperimetric inequalities. The study of affine surface areas has a long history and went back to Blaschke in 1923.

Recently, general affine surface areas were introduced by Ludwig. Such general affine surface areas can involve nonhomogenous (convex and/or concave) functions, and have many nice properties, such as, affine invariance, upper-semicontinuity (or lower-semicontinuity), and valuation. Related affine isoperimetric inequalities have been proved by Ludwig via the Blaschke-Santaló inequality.

In this talk, I will introduce the concept of general affine surface areas, and prove the monotone properties of general affine surfaces under the Steiner symmetrization. As a byproduct, we provide another proof of the affine isoperimetric inequalities for general affine surface areas without assuming the Blaschke-Santaló inequality. Hence, the centroid condition (required by the Blaschke-Santaló inequality) can be removed.