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Dual Brunn–Minkowski Inequality for $(n-1)$-Capacity

A dual capacity Brunn–Minkowski inequality is established for the $(n-1)$-capacity of radial sums of star bodies in $\mathbb{R}^n$. This inequality is a counterpart for the p-capacity of Minkowski sums of convex bodies in $\mathbb{R}^n$ for $1 \leq p < n$, proved by Borell, Colesanti and Salani. When $n \geq 3$, the dual inequality follows from an inequality of Bandle and Marcus, but our new proof allows us to establish an equality condition. In the $n = 2$ case, we use different techniques to establish the inequality and a different equality condition. These results show that in a sense $(n-1)$-capacity has the same status of volume in that it plays the role of its own dual set function in the Brunn–Minkowski and dual Brunn–Minkowski theories.

This is joint work with Richard Gardner.