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Sommario/riassunto

"The Lp-Brunn-Minkowski theory for p<1, proposed by Firey and developed by Lutwak in the 90's, replaces the Minkowski addition of convex sets by its Lp counterpart, in which the support functions are added in Lp-norm. Recently, Boroczky, Lutwak, Yang and Zhang have proposed to extend this theory further to encompass the range. In particular, they conjectured an Lp-Brunn-Minkowski inequality for origin-symmetric convex bodies in that range, which constitutes a strengthening of the classical Brunn-Minkowski inequality. Our main result confirms this conjecture locally for all (smooth) origin-symmetric convex bodies in Rn and. In addition, we confirm the local log-Brunn-Minkowski conjecture (the case) for small-enough C2-perturbations of the unit-ball of for q 2, when the dimension n is sufficiently large, as well as for the cube, which we show is the conjectural extremal case. For unit-balls of with q, we confirm an analogous result for , a universal constant. It turns out that the local version of these conjectures is equivalent to a minimization problem for a spectral-gap parameter associated with a certain differential operator, introduced by Hilbert (under different normalization) in his proof of the Brunn-Minkowski inequality. As applications, we obtain local uniqueness results in the even Lp-Minkowski problem, as well as improved stability estimates in the Brunn- Minkowski and anisotropic isoperimetric inequalities"--