

THE POLAR ORLICZ–BRUNN–MINKOWSKI INEQUALITIES

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Abstract. In this paper, we establish some Orlicz-Brunn-Minkowski type inequalities for (dual) quermassintegrals of polar bodies and star dual bodies, respectively.

Mathematics subject classification (2010): 52A20, 52A40.

Keywords and phrases: Convex body, Orlicz addition, radial Orlicz addition, Orlicz-Brunn-Minkowski inequality.

REFERENCES

- [1] J. FIREY, *Polar means of convex bodies and a dual to the Brunn-Minkowski theorem*, Canad. J. Math., **13** (1961), 444–453.
- [2] J. FIREY, *p-means of convex bodies*, Math. Scand., **10** (1962), 17–24.
- [3] R. J. GARDNER, *The Brunn-Minkowski inequality*, Bull. Amer. Math. Soc., **39** (2002), 355–405.
- [4] R. J. GARDNER, *Geometric tomography*, second edition, Encyclopedia of Mathematics and its Applications, **58**, Cambridge University Press, Cambridge, 2006.
- [5] R. J. GARDNER, D. HUG AND W. WEIL, *The Orlicz Brunn-Minkowski theory: a general framework, additions, and inequalities*, J. Differential Geom., **97** (2014), 427–476.
- [6] R. J. GARDNER, D. HUG, W. WEIL AND D. YE, *The dual Orlicz-Brunn-Minkowski theory*, J. Math. Anal. Appl., **430** (2015), 810–829.
- [7] G. H. HARDY, J. E. LITTLEWOOD AND G. PÓLYA, *Inequalities*, Cambridge Univ. Press, London, 1934.
- [8] C. HABERL, E. LUTWAK, D. YANG AND G. ZHANG, *The even Orlicz Minkowski problem*, Adv. Math., **224** (2010), 2485–2510.
- [9] M. A. HERNÁNDEZ CIFRE AND J. Y. NICOLÁS, *On Brunn-Minkowski-type inequalities for polar bodies*, J. Geom. Anal., **26** (2014), 1–13.
- [10] E. LUTWAK, *Dual mixed volumes*, Pacific J. Math., **58** (1975), 531–538.
- [11] E. LUTWAK, *The Brunn-Minkowski-Firey theory I: Mixed volumes and the Minkowski problem*, J. Differential Geom., **38** (1993), 131–150.
- [12] E. LUTWAK, *The Brunn-Minkowski-Firey theory II: Affine and geominimal surface areas*, Adv. Math., **118** (1996), 244–294.
- [13] E. LUTWAK, D. YANG AND G. ZHANG, *Orlicz projection bodies*, Adv. Math., **223** (2010), 220–242.
- [14] E. LUTWAK, D. YANG AND G. ZHANG, *Orlicz centroid bodies*, J. Differential Geom., **84** (2010), 365–387.
- [15] M. MOSZYŃSKA, *Quotient star bodies, intersection bodies and star duality*, J. Math. Anal. Appl., **232** (1999), 45–60.
- [16] M. MOSZYŃSKA, *Selected Topics in Convex Geometry*, Springer Verlag, 2005.
- [17] C. SAROGLU, *More on logarithmic sums of convex bodies*, Mathematika, **62** (2014), 818–841.
- [18] R. SCHNEIDER, *Convex bodies: the Brunn-Minkowski theory*, second expanded edition, Encyclopedia of Mathematics and its Applications, Cambridge University Press, Cambridge, 2014.
- [19] Y. WANG AND Q. HUANG, *Orlicz-Brunn-Minkowski inequality for polar bodies and dual star bodies*, Math. Inequal. Appl., **20** (2017), 1139–1144.
- [20] D. XI, H. JIN AND G. LENG, *The Orlicz Brunn-Minkowski inequality*, Adv. Math., **260** (2014), 350–374.
- [21] G. XIONG AND D. ZOU, *Orlicz mixed quermassintegrals*, Sci. China Math., **57** (2014), 2549–2562.

- [22] B. ZHU, J. ZHOU AND W. XU, *Dual Orlicz-Brunn-Minkowski theory*, *Adv. Math.*, **264** (2014), 700–725.