

L_p DUAL MIXED GEOMINIMAL SURFACE AREAS FOR MULTIPLE STAR BODIES

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Abstract. In this article, by defining L_p dual mixed quermassintegrals for multiple star bodies, we consider L_p dual mixed geominimal surface areas for multiple star bodies. Further, some related inequalities for this concept are obtained.

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REFERENCES

- [1] Y. B. FENG AND W. D. WANG, L_p -dual mixed geominimal surface area, *Glasg. Math. J.* **56** (2014), 229–239.
- [2] R. J. GARDNER, *Geometric Tomography*, 2nd edn, Cambridge Univ. Press, Cambridge, 2006.
- [3] E. GRINBERG AND G. Y. ZHANG, *Convolutions, transforms, and convex bodies*, *Proc. London Math. Soc.* **78** (1999), 77–115.
- [4] G. H. HARDY, J. E. LITTLEWOOD AND G. PÓLYA, *Inequalities*, Cambridge University Press, Cambridge, 1934.
- [5] J. C. KUANG, *Applied inequalities*, Shandong Science and Technology Press, Jinan, 2010.
- [6] Y. N. LI AND W. D. WANG, *The L_p dual mixed geominimal surface area for multiple star bodies*, *J. Inequal. Appl.* **2014** (2014), 1–10.
- [7] M. LUDWIG, *General affine surface areas*, *Adv. Math.* **224** (2010), 2346–2360.
- [8] M. LUDWIG AND M. REITZNER, *A characterization of affine surface area*, *Adv. Math.* **147** (1999), 138–172.
- [9] E. LUTWAK, *The Brunn-Minkowski-Firey theory I: mixed volumes and the Minkowski problem*, *J. Differential Geom.* **38** (1993), 131–150.
- [10] E. LUTWAK, *The Brunn-Minkowski-Firey theory II: affine and geominimal surface areas*, *Adv. Math.* **118** (1996), 244–294.
- [11] T. Y. MA, *The i th p -geominimal surface area*, *J. Inequal. Appl.* **2014** (2014), 1–26.
- [12] T. Y. MA AND Y. B. FENG, *The i th p -affine surface area*, *J. Inequal. Appl.* **2015** (2015), 1–26.
- [13] T. Y. MA AND Y. B. FENG, *Dual L_p -mixed geominimal surface area and related inequalities*, *J. Funct. Spaces*, 2016, 10 pages.
- [14] C. M. PETTY, *Geominimal surface area*, *Geom. Dedicata.* **3** (1974), 77–97.
- [15] R. SCHNEIDER, *Convex Bodies: The Brunn-Minkowski theory*, 2nd edn, Cambridge Univ. Press, Cambridge, 2014.
- [16] C. SCHTT AND E. WERNER, *Surface bodies and p -affine surface area*, *Adv. Math.* **187** (2004), 98–145.
- [17] X. Y. WAN AND W. D. WANG, *L_p -dual geominimal surface area*, *J. Wuhan Univ. (Nat. Sci. Ed.)*, **59** (2013), 515–518.
- [18] W. D. WANG AND Y. B. FENG, *A general L_p -version of Petty's affine projection inequality*, *Taiwan. J. Math.* **17** (2013), 517–528.
- [19] W. D. WANG AND G. S. LENG, *L_p -dual mixed quermassintegrals*, *Indian J. Pure Appl. Math.* **36** (2005), 177–188.

- [20] W. D. WANG AND G. S. LENG, L_p -mixed affine surface area, *J. Math. Anal. Appl.* **36** (2005), 341–354.
- [21] W. D. WANG AND G. S. LENG, Some affine isoperimetric inequalities associated with L_p -affine surface area, *Houston J. Math.* **34** (2008), 443–453.
- [22] W. D. WANG AND C. QI, L_p -dual geominimal surface area, *J. Inequal. Appl.* **2011** (2011), 1–10.
- [23] E. WERNER AND D. P. YE, New L_p affine isoperimetric inequalities, *Adv. Math.* **218** (2008), 762–780.
- [24] L. YAN, W. D. WANG AND L. SI, L_p -dual mixed geominimal surface areas, *J. Nonlinear Sci. Appl.* **9** (2016), 1143–1152.
- [25] D. P. YE, On the L_p -geominimal surface area and related inequalities, *Int. Math. Res. Not.* **9** (2014), 2465–2498.
- [26] D. P. YE, B. C. ZHU AND J. Z. ZHOU, The mixed L_p geominimal surface areas for multiple convex bodies, *Indiana Univ. Math. J.* **64** (2015), 1513–1552.
- [27] J. YUAN, S. J. LV AND G. S. LENG, The p -affine surface area, *Math. Ineq. Appl.* **3** (2007), 693–702.
- [28] B. C. ZHU, N. LI AND J. Z. ZHOU, Isoperimetric inequalities for L_p geominimal surface area, *Glasg. Math. J.* **53** (2011), 717–726.
- [29] B. C. ZHU, J. Z. ZHOU AND W. X. XU, Affine isoperimetric inequalities for L_p geominimal surface area, *Springer Proc. Math. Stat.* **106** (2014), 167–176.
- [30] B. C. ZHU, J. Z. ZHOU AND W. X. XU, L_p mixed geominimal surface area, *J. Math. Anal. Appl.* **422** (2015), 1247–1263.