

SHEPHARD TYPE PROBLEMS FOR L_p -CENTROID BODIES

FENG YIBIN AND WANG WEIDONG

Abstract. Lutwak and Zhang proposed the notion of the L_p -centroid body. In this article, based on the definition of L_p -dual affine surface area, we research Shephard type problems for the L_p -centroid body

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

Keywords and phrases: L_p -centroid body, Shephard type problems, L_p -dual affine surface area.

REFERENCES

- [1] R. J. GARDNER, *Geometric Tomography*, Second ed., Cambridge Univ. Press, Cambridge, 2006.
- [2] E. GRINBERG AND G. Y. ZHANG, *Convolutions transforms and convex bodies*, Pron. London Math. Soc., **78** (1999), 3: 77–115.
- [3] E. LUTWAK AND G. Y. ZHANG, *Blaschke-Santaló inequalities*, J. Differential Geom., **47** (1997), 1: 1–16.
- [4] E. LUTWAK, D. YANG AND G. Y. ZHANG, *L_p -affine isoperimetric inequalities*, J. Differential Geom., **56** (2000), 1: 111–132.
- [5] E. LUTWAK, D. YANG AND G. Y. ZHANG, *The Cramer-Rao inequality for star bodies*, Duke. Math. J., **112** (2002), 1: 59–81.
- [6] E. LUTWAK, *the Brunn-Minkowski-Firey theory II: affine and geominimal surface areas*, Adv. Math., **118** (1996), 2: 244–294.
- [7] E. LUTWAK, *The Brunn-Minkowski-Firey theory I: mixed volumes and the minkowski problem*, J. Differential Geom., **38** (1993), 1: 131–150.
- [8] R. SCHNEIDER, *Convex Bodies: The Brunn-Minkowski Theory*, Cambridge Univ. Press, Cambridge, 1993.
- [9] C. SCHÜTT AND E. WERNER, *Surface bodies and p -affine surface area*, Adv. Math., **187** (2004), 98–145.
- [10] W. D. WANG AND G. S. LENG, *L_p -mixed affine surface area*, J. Math. Anal. Appl., **335** (2007), 1: 341–354.
- [11] W. D. WANG AND G. S. LENG, *Some affine isoperimetric inequalities associated with L_p -affine surface area*, Houston Journal of Mathematics, **34** (2008), 2: 443–453.
- [12] W. D. WANG, F. H. LU AND G. S. LENG, *A type of monotonicity on the L_p -centroid body and L_p -projection body*, Mathematical inequalities & Application, **8** (2005), 4: 735–742.
- [13] W. D. WANG AND G. S. LENG, *On the monotonicity of L_p -centroid body*, J. Sys. Sci. & Math. Scis., **28** (2008), 2: 154–162. (in chinese)
- [14] W. WANG AND B. W. HE, *L_p -dual affine surface area*, J. Math. Anal. Appl., **348** (2008), 746–751.
- [15] E. WERNER AND D. YE, *New L_p -affine isoperimetric inequalities*, Adv. Math., **218** (2008), 3: 762–780.
- [16] E. WERNER AND D. YE, *Inequalities for mixed p -affine surface area*, Math. Ann., **347** (2010), 3: 703–737.
- [17] J. YUAN, L. Z. ZHAO AND G. S. LENG, *Inequalities for L_p -centroid body*, Tai wan. J. Math., **29**(2008), 2: 209–220.