Mathematical
Inequalities
& Applications
Volume 18, Number 1 (2015), 91–96
doi:10.7153/mia-18-05

BURKHOLDER–GUNDY–DAVIS INEQUALITY ON LORENTZ MARTINGALE SPACES

REN YANBO AND GUO TIEXIN

Abstract. Let $f=(f_n)_{n\geqslant 0}$ be a martingale, $0<p<\infty$, $1\leqslant q<\infty$. In this paper we obtain a $L_{p,q}$-version of Burkholder-Gundy-Davis martingale inequality

$$\| S(f) \|_{p,q} \approx \| M(f) \|_{p,q},$$

by means of rearrangement technique.

Mathematics subject classification (2010): Primary 60G42; Secondary 46E30.
Keywords and phrases: Burkholder-Gundy-Davis inequality, martingale inequality, rearrangement function.

REFERENCES

[1] D. L. BURKHOLDER, *Distribution function inequalities for martingales*, Annals of Prob., **1**, (1973), 19–42.
[2] D. L. BURKHOLDER, R. F. GUNDY,, *Extrapolation and interpolation of quasi-linear operators on martingales*, Acta Math., **124**, (1970), 249–304.
[3] R. L. LONG, *Rearrangement techniques in martingale setting*, Illinois J. Math., **35**, (1991), 506–521.
[4] R. J. BAGBY, D. S. KURTZ, *A rearranged good λ-inequality*, Trans. Amer. Math. Soc., **293**, (1973), 71–81.
[5] F. WEISZ, *Martingale Hardy Spaces and their Applications in Fourier Analysis*, Lecture Notes in Math., Vol 1568, (1994).

Paper MIA-18-05