

THE SPITZER LAW FOR ψ -MIXING RANDOM VARIABLES

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Abstract. The Spitzer law is obtained for the maximum partial sums of the identically distributed ψ -mixing random variables without any conditions on mixing rate, and another proof of the classical Kolmogorov strong law of large numbers is also given for them.

Mathematics subject classification (2010): 60F15.

Keywords and phrases: Spitzer law, strong law of large number, ψ -mixing.

REFERENCES

- [1] L. E. BAUM, M. KATZ, *Convergence rate in the law of large numbers*, Trans. Amer. Math. Soc. **120** (1965), 108–123.
- [2] J. R. BLUM, D. L. HANSON, L. H. KOOPMANS, *On the strong law of large numbers for a class of stochastic processes*, Z. Wahrsch. Verw. Gebiete **2** (1963), 1–11.
- [3] P. CHEN, T.-C. HU, AND A. VOLODIN, *A note on the rate of complete convergence for maximum of partial sums for moving average processes in Rademacher type Banach spaces*, Lobachevskii J. Math. **21** (2006), 45–55.
- [4] P. HSU, H. ROBBINS, *Complete convergence and the law of large numbers*, Proc. Natl. Acad. Sci. USA, **33** (1947), 25–31.
- [5] D. HU, P. CHEN, H. S. SUNG, *Strong laws for weighted sums of ψ -mixing random variables and applications in errors-in-variables regression models*, Test **26** (2017), 600–617.
- [6] Z. Y. LIN, C. Y. LU, *Limit Theory for Mixing Random Variables*, Kluwer Academic Publishers/Science Press, Dordrecht/Beijing, 1997.
- [7] F. SPITZER, *A combinatorial lemma and its application to probability theory*, Tran. Amer. Math. Soc. **82** (1956), 323–339.
- [8] Q. SHAO, *A moment inequality and its application*, Acta Math. Sin. **31** (1988), 736–747 (in Chinese).
- [9] W. F. STOUT, *Almost Sure Convergence*, Academic Press, New York, 1974.