A NOTE ON THE STRONG CONVERGENCE FOR
WEIGHTED SUMS OF ρ^*–MIXING RANDOM VARIABLES

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Abstract. In this work, the authors investigate the strong convergence for weighted sums of ρ^*-mixing random variables and obtain an improved convergence theorem so called the complete moment convergence in some sense. The result archived not only generalizes the corresponding ones of Sung (*Stat. Papers* 52: 447–454 (2011)), Zhou et al. (*J. Inequal. Appl.* 2011, Article ID 157816 (2011)), Sung (*Stat. Papers* 54: 773–781 (2013)) and Wu et al. (*Lith. Math. J.* 54 (2): 220–228 (2014)), but also improves them, respectively.

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REFERENCES

[1] S. H. SUNG, *On the strong convergence for weighted sums of random variables*, Stat. Papers **52**: 447–454, 2011.

[2] X. C. ZHOU, C. C. TAN AND J. G. LIN, *On the strong laws for weighted sums of ρ^*-mixing random variables*, J. Inequal. Appl. **2011**, Article ID 157816, `doi:10.1155/2011/157816`.

[3] S. H. SUNG, *On the strong convergence for weighted sums of ρ^*-mixing random variables*, Stat. Papers **54**: 773–781, 2013.

[4] Y. F. WU, S. H. SUNG AND A. VOLODIN, *A note on the rates of convergence for weighted sums of ρ^*-mixing random variables*, Lith., Math. J. **54** (2): 220–228, 2014.

[5] W. LI, P. Y. CHEN AND S. H SUNG, *Remark on convergence rate for weighted sums of ρ^*-mixing random variables*, RACSAM **2016**, `doi:10.1007/s13398-016-0314-2`.

[6] Y. F. WU, T. C. HU AND A. VOLODIN, *Complete convergence and complete moment convergence for weighted sums of m-NA random variables*, J. Inequal. Appl. **2015**, `doi:10.1186/s13660-015-0717-1`.

[7] R. C. BRADLEY, *On the spectral density and asymptotic normality of weakly dependent random fields*, J. Theor. Probab. **5** (2): 355–373, 1992.

[8] S. UTEV AND M. PELIGRAD, *Maximal inequalities and an invariance principle for a class of weakly dependent random variables*, J. Theor. Probab. **16** (1): 101–115, 2003.

[9] Q. Y. WU AND Y. Y. JIANG, *Some strong limit theorems for $\tilde{\rho}$-mixing sequences of random variables*, Stat. Probab. Lett. **78** (8): 1017–1023, 2008.

[10] X. J. WANG, X. Q. LI, W. Z. YANG AND S. H. HU, *On complete convergence for arrays of rowwise weakly dependent random variables*, Appl. Math. Lett. **25**: 1916–1920, 2012.

[11] M. L. GUO AND D. J. ZHU, *Equivalent conditions of complete moment convergence of weighted sums for ρ^*-mixing sequence of random variables*, Stat. Probab. Lett. **83**: 13–20, 2013.

[12] Y. F. WU AND J. Y. PENG, *Strong convergence for weighted sums of $\tilde{\rho}$-mixing random variables*, Glasnik Matematicki **49** (1): 221–234, 2014.

[13] X. J. WANG, X. DENG, F. X. XIA AND S. H. HU, *The consistency for the estimators of semiparametric regression model based on weakly dependent errors*, Stat. Papers **58** (2): 303–318, 2017.

[14] Y. WU, X. J. WANG AND S. H. HU, *Complete moment convergence for weighted sums of weakly dependent random variables and its application in nonparametric regression model*, Stat. Probab. Lett. **127**: 56–66, 2017.

[15] Y. WU AND X. J. WANG, *A note on the consistency for the estimators of semiparametric regression model*, Stat. Papers, in press, 2016. `doi:10.1007/s00362-016-0807-2`.

[16] A. T. SHEN, H. Y. ZHU AND Y. ZHANG, *Exponential inequality for $\tilde{\rho}$-mixing sequences and its applications*, Filomat **28** (4): 859–870, 2014.

[17] P. L. HSU AND H. ROBBINS, *Complete convergence and the law of large numbers*, Proc. Natl. Acad. Sci. USA, **33** (2): 25–31, 1947.

[18] Y. S. CHOW, *On the rate of moment complete convergence of sample sums and extremes*, Bull. Inst. Math. Acad. Sin. **16**: 177–201, 1988.

[19] Q. M. SHAO, *A comparison theorem on moment inequalities between negatively associated and independent random variables*, J. Theor. Probab. **13** (2): 343–356, 2000.

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