STRONG EXPONENTIAL INTEGRABILITY OF SUMS OF INDEPENDENT B-VALUED RANDOM VECTORS

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Abstract: An exponential inequality for sums of independent uniformly bounded B-valued random vectors is proved. It is applied to obtain results of the form

$$\sup_n E\{\exp(\alpha||S_n||\log(1+||S_n||))\} < \infty$$

for uniformly bounded row-wise independent triangular arrays and independent series. A sharp integrability result for Poisson measures on spaces of cotype 2 follows as a corollary. Some integrability results of the form

$$\sup_n E\{\exp(\alpha||S_n||^p)\} < \infty \; (1 < p \le 2)$$

for certain triangular arrays and series are proved, generalizing some recent work of Kuelbs. As an application some results on convergence of exponential moments in the central limit theorem are obtained.

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