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Abstracts of Short Communications and Posters

Section:

12. Probability and Statistics

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Probability inequalities for sums of dependent Banach space valued random variables

Let $X_k,\ k=\overline{1,n}$, be random variables taking values in the separable Banach space with the norm $|\cdot|$. Put $S_k=\sum_1^k X_i,\ M_n=\max\limits_{1\le k\le n}|S_k|$. Let $\mathcal{F}_j^k$ denote the σ - lgebra generated by the random variables $X_l,\ l=j,...,k$. Define $\phi^+(m)=\sup\limits_{1\le k\le n}\ \sup\limits_{A\in\mathcal{F}_1^k,\ B\in\mathcal{F}_{k+m}^n}\Big(\mathbf{P}(AB)/\mathbf{P}(A)-\mathbf{P}(B)\Big)$. Let $\phi^+(1)<1$ and $\delta>0$ satisfy the condition $\rho=:\delta+\phi^+(1)<1$. Let α be such that $\mathbf{P}(2M_n>\alpha)<\delta$. Define $Q(r)=\sum_1^n\mathbf{P}(|X_j|>r),\ A_t=\sum_1^n\mathbf{E}|X_j|^t$.

Theorem. *Let $r>\alpha$ and $a_q\ge 0$ be any sequence such that $\sum_0^\infty a_q\le 1$. Then*

$$\mathbf{P}(M_n>r)<\sum_{q<r/2\alpha}\rho^q Q(a_q r/2)+(1-\rho)^{-1}\rho^{r/2\alpha}.$$

Reference: S. V. Nagaev, Probability inequalities for sums of independent Banach valued random variables, *Sibirsk. Mat. Zh.* , **28**, (1987), 171-184.