Семинар по линейному и комплексному анализу

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On the Hoeffding decomposition in L^p and H^1 spaces

We provide a simple proof of the known fact that the projection $\tilde{P}_m$ onto the subspace $\tilde{V}_m$ of $L_2(\Omega^\infty, \mathcal{F}^{\otimes\infty}, \mu^{\otimes\infty})$ spanned by functions dependent on at most m variables is bounded in L^p with norm $\leq c_p^m$. Our proof carries over to the space $H^1(\mathbb{D}^\infty)$ of functions in $L^1(\mathbb{T}^\infty)$ analytic in each variable. We also prove that $\tilde{P}_2$ acts on the martingale Hardy space associated with certain double-indexed filtration.

Joint work with M. Rzeszut