PROBABILITY
AND
MATHEMATICAL STATISTICS
Vol. 3, Fasc. 2 (1984), pp. 205–215

INEQUALITIES BETWEEN INTEGRALS OF p-STABLE SYMMETRIC MEASURES ON BANACH SPACES

Werner Linde
Peter Mathe

Abstract: Let n and ν be symmetric Gaussian probability measures on a Banach space E and let E' be the dual of E. Then, as is well known, the inequality

$$\int_E |\langle x, a\rangle|^2 d\mu(x) \le \int_E |\langle x, a\rangle|^2 d\nu(x) \quad \text{for all } a \in E'$$

implies

$$\int_E \|x\|^2 d\mu(x) \le \int_E \|x\|^2 d\nu(x).$$

If we replace Gaussian measures by p-stable ones ($0 < p < 2$), the property does not hold. Thus we consider the class $\mathcal{A}_p$ of such Banach spaces, where a generalization to the p-stable case is true. Furthermore, we give relations of $\mathcal{A}_p$ to some other classes of Banach spaces and we get also inclusion properties of $\mathcal{A}_p$, $0 < p < 2$. Recently, similar classes of Banach spaces have been investigated by Mandrekar, Thang, Tien, and Weron.

2000 AMS Mathematics Subject Classification: Primary: -; Secondary: -;

Key words and phrases: -