ON DENSITY OF A STABLE UNIFORMLY CONVEX NORM

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Abstract: Let \((E, \| \cdot \|)\) be a uniformly convex Banach space and assume that its modulus of uniform convexity \(\alpha(\cdot)\) satisfies the condition: 
\[
\alpha(\varepsilon) \geq \text{const} \cdot \varepsilon^n, \quad n \in \mathbb{N}.
\]
We prove that for every stable symmetric measure \(\mu\) on \(E\) the density of the distribution function 
\[
F_z(t) = \mu\{\| \cdot + z \| < t\}, \quad z \in E
\]
is bounded on every interval \((0, T), \quad T > 0\).
Under some additional assumptions we extend the conclusion to the whole half-line \((0, \infty)\).

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