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Ya Qiang Yan:

On the Exact Value of Packing Spheres in a Class of Orlicz Function Spaces

Main result: the packing constants of Orlicz function spaces $L^{(\Phi)}[0,1]$ and $L^{\Phi}[0,1]$ with Luxemburg and Orlicz norm have the exact value.

(i) If $F_\Phi(t) = t\varphi(t)/\Phi(t)$ is decreasing, $1 < C_\Phi < 2$, then

$$P(L^{(\Phi)}[0,1]) = P(L^{\Phi}[0,1]) = \frac{2^{1/C_\Phi}}{2+2^{1/C_\Phi}};$$

(ii) If $F_\Phi(t)$ is increasing, $C_\Phi > 2$, then

$$P(L^{(\Phi)}[0,1]) = P(L^{\Phi}[0,1]) = \frac{1}{1+2^{1/C_\Phi}},$$

where $C_\Phi = \lim\limits_{t\to\infty} F_\Phi(t)$.

Keywords: Orlicz space, packing constants, Kottman constants.

MSC 2000: 46E30.