Pinkus, A. (IL-TECH)

On smoothest interpolants.


Let \((y_i)_{i=1}^N\) be fixed values. It is known that for any choice \(a \leq x_1 < \cdots < x_N = b\) of the nodes \((x_i)_{i=1}^N\) there exists a function \(f_p(x, y; t)\) that interpolates the data \((x_i, y_i)_{i=1}^N\) and has a minimum \(L_p\)-norm of its \(n\)th derivative \((1 \leq p \leq \infty)\). The author goes further and studies the minimization problem \(\|f_p(x, y; \cdot)\|_p \to \inf \) over \(a = x_1 < \cdots < x_N = b\).

He proves the uniqueness of the extremal function in the case \(p = \infty\) and gives necessary conditions for \(p < \infty\). The uniqueness is still an open problem for \(p < \infty\).  

_B. Boyanov (BG-SOFI)_