

Schur's polynomial inequalities on UPC subsets of \mathbb{R}^N

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Abstract

The generalized Shur's inequality is the bound for polynomials of one variable

$$\|Q\|_{[-1,1]} \leq S(\deg Q, \alpha) \|Q(t)(1-t^2)^\alpha\|_{[-1,1]}.$$

In the classical case $\alpha = \frac{1}{2}$ we have $S(\deg Q, \alpha) = \deg Q + 1$, which implies by an interpolation argument

$$S(\deg Q, \alpha) \leq (\deg Q + 1)^{2\alpha}.$$

We shall discuss how to get better bounds for $S(\deg Q, \alpha)$ and we shall show applications to family *UPC* subsets of \mathbb{R}^N introduced by Pawłucki and Pleśniak.