998-42-201 **Laura De Carli*** (decarlil@fiu.edu), Florida International University, Dept. of Mathematics, Univ. Park, DM Building, Miami, FL 33199. *Uniform estimates of ultraspherical polynomials of large order and applications.*Preliminary report.

We prove the sharp inequality

$$|P_n^{(s)}(x)| \leq P_n^{(s)}(1)\left(|x|^n + \frac{n-1}{2s+1}(1-|x|^n)\right),$$

where $P_n^{(s)}(x)$ is the classical ultraspherical polynomial of degree n and order $s \geq n\frac{1+\sqrt{5}}{4}$. This inequality can be refined in certain intervals of $[-1,1]$. We use these inequalities to estimate linear combinations of ultraspherical polynomials of large order. (Received February 26, 2004)