1133-30-40 **Xin Li**, Department of Mathematics, University of Central Florida, 4393 Andromeda Loop N, Orlando, FL 32816, and **Rajitha Ranasinghe***, Department of Mathematics, University of Central Florida, 4393 Andromeda Loop N, Orlando, FL 32816. *A Bernstein-type inequality for the Askey-Wilson operator and related results.*

For $|q| < 1$ and given a function $f(x)$ with $x = \cos\theta$, the Askey-Wilson operator, $\mathcal{D}_q$ on f is defined by

$$(\mathcal{D}_q f)(x) := \frac{\breve{f}(q^{1/2}z) - \breve{f}(q^{-1/2}z)}{(q^{1/2} - q^{-1/2})i\sin\theta},$$

where

$$\breve{f}(z) := f\left(\frac{1}{2}\left(z + \frac{1}{z}\right)\right), \ z = e^{i\theta}.$$

Let P_n be a polynomial of degree n. By applying $\mathcal{D}_q$ on P_n we obtain a Riesz-type interpolation from which we establish a Bernstein-type inequality:

$$|(\mathcal{D}_q P_n)(x)| \leq \frac{1}{\sqrt{1-x^2}} \cdot \frac{q^{n/2} - q^{-n/2}}{q^{1/2} - q^{-1/2}} \cdot \max_{\zeta\in[-1,1]} |P_n(\zeta)|, \quad x \in (-1,1).$$

As $q \to 1^-$, the above inequality reduces to the classical Bernstein inequality

$$|P_n'(x)| \leq \frac{n}{\sqrt{1-x^2}} \cdot \max_{\zeta\in[-1,1]} |P_n(\zeta)|, \quad x \in (-1,1),$$

with equality being achieved for $P_n \equiv cT_n$ for some constant c, where $T_n(x) = \cos(n \arccos x)$ is the Chebyshev polynomial of first-kind. Several other related results were also obtained. Our proofs are based on the ideas of G. Szegö and M. Riesz. (Received June 20, 2017)