

## Geometric Properties of Some $q$ -Bessel Functions

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**Abstract :** In this paper, the radii of star likeness of the Jackson and Hahn-Exton  $q$ -Bessel functions are considered, and for each of them three different normalizations is applied. By applying Euler-Rayleigh inequalities for the first positive zeros of these functions tight lower, and upper bounds for the radii of starlikeness of these functions are obtained. The Laguerre-Pólya class of real entire functions plays an important role in this study. In particular, we obtain some new bounds for the first positive zero of the derivative of the classical Bessel function of the first kind.

**Keywords :** bessel function, lommel function, radius of starlikeness and convexity, Struve function

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