

INEQUALITIES FOR THE MODIFIED BESSEL FUNCTION OF THE SECOND KIND AND THE KERNEL OF THE KRÄTZEL INTEGRAL TRANSFORMATION

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Abstract. We obtain new inequalities for the modified Bessel function of the second kind K_ν in terms of the gamma function. These bounds follow as special cases of inequalities that we derive for the kernel of the Krätzel integral transformation.

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REFERENCES

- [1] Á. BARICZ, *Bounds for modified Bessel functions of the first and second kinds*, P. Edinburgh Math. Soc. **53** (2010), 575–599.
- [2] J. A. BARRIOS AND J. J. BETANCOR, *The Krätzel integral transformation of distributions*, Math Nachr. **154** (1991), 11–26.
- [3] R. E. GAUNT, *Inequalities for modified Bessel functions and their integrals*, J. Math. Anal. Appl. **420** (2014), 373–386.
- [4] W. GAUTSCHI, *Some elementary inequalities relating to the gamma and incomplete gamma function*, J. Math. Phys. **38** (1959), 77–81.
- [5] E. K. IFANTIS AND P. D. SIAFARIKAS, *Inequalities involving Bessel and modified Bessel functions*, J. Math. Anal. Appl. **147** (1990), 214–227.
- [6] E. KRÄTZEL, *Eine Verallgemeinerung der Laplace und Meijer transformation*, Wiss. Z. Univ. Jena. Math. Naturw. Reihe. **5** (1965), 369–381.
- [7] Y. L. LUKE, *Inequalities for generalized hypergeometric functions*, J. Approx. Theory **5** (1972), 41–65.
- [8] F. W. J. OLVER, D. W. LOZIER, R. F. BOISVERT AND C. W. CLARK (Eds.), *NIST Handbook of Mathematical Functions*, Cambridge University Press, 2010.