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Landen-Type Inequality for Bessel Functions

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Abstract. Let $u_p(x)$ be the generalized and normalized Bessel function depending on parameters b, c, p and let $\lambda(r) = u_p(r^2)$, $r \in (0, 1)$. Motivated by an open problem of Anderson, Vamanamurthy and Vuorinen, we prove that the Landen-type inequality $\lambda(2\sqrt{r}/(1+r)) < C\lambda(r)$ holds for all $r \in (0, 1)$ and $C > 1$, for certain conditions on the parameters b, c, p .

Keywords. Landen inequality, hypergeometric functions, Bessel functions, Kummer functions.

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