Banga, Shagun; Sivaprasad Kumar, S.
The sharp bounds of the second and third Hankel determinants for the class $\mathcal{SL}^*$. (English) [Zbl 07439813]
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Summary: In this paper, we use the novel idea of incorporating the recently derived formula for the fourth coefficient of Carathéodory functions, in place of the routine triangle inequality to achieve the sharp bounds of the Hankel determinants $H_3(1)$ and $H_2(3)$ for the well known class $\mathcal{SL}^*$ of starlike functions associated with the right lemniscate of Bernoulli. Apart from that the sharp bound of the Zalcman functional: $|a_2^3 - a_5|$ for the class $\mathcal{SL}^*$ is also estimated. Further, a couple of interesting results of $\mathcal{SL}^*$ are also discussed.

MSC:
30C45 Special classes of univalent and multivalent functions of one complex variable (starlike, convex, bounded rotation, etc.)
30C50 Coefficient problems for univalent and multivalent functions of one complex variable

Keywords:
star-like functions; lemniscate of Bernoulli; Hankel determinant; coefficient estimates

Full Text: DOI

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