

ON HARMONIC MAPPINGS LIFTING TO MINIMAL SURFACES

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Abstract. The projection on the base plane of a regular minimal surface S in \mathbb{R}^3 with isothermal parameters defines a complex-valued univalent harmonic function f . We obtain distortion theorems for the Weierstrass-Enneper parameters and the Gaussian curvature of the minimal surface S , provided that the corresponding univalent harmonic function f belongs to the class $\mathcal{S}_{\mathbb{H}}^*$.

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REFERENCES

- [1] CHUAQUI, M., DUREN, P. and OSGOOD, B., *The Schwarzian derivative for harmonic mappings*, J. Anal. Math., **91** (2003), 329–351.
- [2] DEY, R., *The Weierstrass-Enneper representation using hodographic coordinates on a minimal surface*, Proc. Indian Acad. Sci. Math. Sci. (Math. Sci.) **113** (2003), No. 2, 189–193.
- [3] DUREN, P., *Univalent functions*, Grundlehren der mathematischen Wissenschaften, **259**, Springer-Verlag, Berlin, New York, 1983.
- [4] DUREN, P., *Harmonic mappings in the plane*, Cambridge University Press, Cambridge, 2004.
- [5] LEWANDOSKI, Z. *Starlike majorants and subordination*, Ann. Univ. Mariae Curie-Sklodowska Sect. A, **15**(1961), 79–84.

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