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MAPPING PROPERTIES OF PLANAR HARMONIC FUNCTIONS VIA MILLER-ROSS FUNCTIONS

Surendra M. Magar and Mallikarjun G. Shrigan

Department of Mathematics,
JSPM University Pune,
Pune - 412207, Maharashtra, INDIA

E-mail : magars125@gmail.com, mgshrigan@gmail.com

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Abstract: In this paper, we investigate the relationship between a novel class of harmonic univalent functions and the harmonic starlike and convex functions defined in the open unit disk, using a convolution operator associated with the Miller-Ross function. The importance of this investigation lies in the fact that convolution operators generated by special functions, such as the Miller–Ross function, provide powerful tools for constructing and characterizing new subclasses of harmonic mappings with rich geometric behavior. Several corollaries and related consequences of the main results are also established.

Keywords and Phrases: Analytic functions, Univalent functions, Miller-Ross function, harmonic functions.

2020 Mathematics Subject Classification: 30C45.

1. Introduction

Harmonic functions hold a prominent place in mathematical analysis and applied mathematics because of its exquisite qualities and wide-ranging applicability in many fields. Numerous mathematical phenomena can be discovered through the study of harmonic functions. Because both their real and imaginary parts are harmonic, holomorphic functions and harmonic functions are intimately related in complex analysis. Additionally, Harmonic functions are essential in conformal