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A NOTE ON BICOMPLEX MANIFOLD

Tandra Sarkar, Arindam Bhattacharyya and Sanjib Kumar Datta*

Department of Mathematics,
Jadavpur University,
188, Raja S.C. Mallick Road, Kolkata - 700032, West Bengal, INDIA

E-mail : tandrasarkar073@gmail.com, arindambhat16@gmail.com

*Department of Mathematics,
University of Kalyani,
Kalyani, Nadia - 741235, West Bengal, INDIA

E-mail : sanjibdatta05@gmail.com

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Abstract: Bicomplex number can be regarded as a well-known extension of complex number and is of dimension four. In this paper, we define a new notion of manifolds termed as almost bicomplex, bicomplex, bicomplex Hermite manifold and discuss some interesting properties of Nijenhuis tensor, contravariant almost analytic vector fields etc. in this sequel.

Keywords and Phrases: Complex manifold, Bicomplex manifold, almost bicomplex manifold, bicomplex Hermite manifold.

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1. Introduction, Definitions and Notations

Bicomplex numbers, a well-known extension of complex numbers of dimension four have been studied for quite a long time and a lot of work has been done in this area. In 1844 the skew field of quaternions was introduced by W. R. Hamilton, a well-known extension of the field of complex numbers {cf. [8]}. In quaternions, there are three imaginary units $i,\ j,\ k$ that anti-commute with the property $ij = k$.

The beauty of the theory of quaternions is that they form a field where all the ordinary operations can be accomplished. Although from the algebraic point of