J. of Ramanujan Society of Math. and Math. Sc. **ISSN : 2319-1023**
Vol.5, No.2 (2016), pp. 135-138

A STUDY OF ANALYTIC K-TORSE FORMING VECTOR FIELD

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Abstract: In this paper, we discuss about the K-torse forming vector field analytic.

Keywords and Phrases: Kaehlerian space, vector field, covariant differentiation, Christoffel symbols.

Mathematics Subject Classification: 53B20, 53C55.

1. Introduction, Notations and Definitions

In a Kaehlerian space, a vector field V is said to be K-torse forming vector field [1], provided it satisfies the equation

$$\nabla_j V^h = a\delta_j^h + bF_j^h + \alpha_j V^h + \beta_j \tilde{V}^h \tag{1}$$

where $\tilde{V}^h = F_r^h V^r$, a and b are suitable functions and α, β are certain 1- forms and ∇_j stands for the operator of covariant differentiation with respect to the Christoffel symbols of the Kaehlerian manifolds.

In order that the K-torse forming vector field analytic, it has been proved that it is necessary and sufficient that

$$\beta_j = -F_j^r \alpha_r = \tilde{\alpha}_j$$

and so for an analytic K-torse forming vector field, we have

$$\nabla_j V^h = a\delta_j^h + bF_j^h + \alpha_j V^h + \tilde{\alpha}_j \tilde{V}^h \tag{2}$$

Now on substituting from

$$\Gamma_{ji}^h = \left\{ \begin{matrix} h \\ ji \end{matrix} \right\} + \delta_j^h p_i + \delta_i^h p_j - g_{ji} p^h + F_j^h q_i - F_{ji} q^h$$