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On Geometry of Submanifolds of Almost Hermitian Manifolds and Almost Contact Metric Manifolds

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Findings

The study of Geometry of submanifolds of a differential manifold is one of the most captivating topics of modern differential geometry. The study of curves and surfaces in 3-dimensional Euclidean space can be generalized to arbitrary dimension and co-dimension and to arbitrary ambient spaces. The contribution of this study would be interesting to researcher in differential geometry and other related fields. The main objective of this thesis is to study the numerous geometric structures on any submanifold of a Riemannian manifold. This thesis is divided into six chapters and each chapter is further divided in various sections and details of which are as follows:

Chapter 1. This chapter is introductory, where we give basic definitions, formulae and results which are relevant to the subsequent chapters. Although most of these results are available in standard references on the subject, nevertheless we have collected them to make the thesis self contained.

Chapter 2. This chapter is devoted to discuss the tension field of f -biharmonic and bi-f-harmonic Riemannian submersion from three dimensional Riemannian manifold onto one dimensional complex manifold which generalizes some results of biharmonic Riemannian submersion [2],[63]. Finally in the last section we obtain f-biharmonic cylinders of a Riemannian submersion.

Chapter 3. In this chapter we discuss the bounds for Ricci curvature for doubly warped product submanifold in quaternionic space form. Further we obtain some applications of the result in terms of the harmonic function.

Chapter 4. In the present chapter we study conformal Ricci soliton on para-contact metric (k, μ)-manifolds with Schouten-van Kampen connection. Further, we obtain the result when Ricci soliton satisfying the condition $\hat{C}(\xi, U)\cdot \hat{S} = 0$. Finally a characterization of paracontact metric (k, μ)-manifolds satisfying concircular curvature tensor with respect to Schouten-van Kampen connection is discussed.

Chapter 5. In this chapter we study interpolating sesqui harmonic slant curve in S-space form under different conditions and thus generalizing some results of the papers [18], [51], [24]. In the last section we give examples in support of our results.

Chapter 6. In this final chapter we introduce f -interpolating sesqui harmonic maps and study its integral submanifolds in S-space forms. Finally, we study f -interpolating sesqui harmonic Legendre curve in S-space forms mention in the chapter itself.