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CONFORMAL CHANGES OF ODD-DIMENSIONAL GENERALIZED STRUCTURES

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Abstract. In this paper, we consider the integrability of generalized almost contact and contact manifolds after conformal changes. We also study conditions under which the generalized almost contact and normal generalized contact structures, be normal after conformal changes.

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1. Introduction

The notion of a generalized complex structure, introduced by Hitchin [3], is a geometric framework that unifies both complex and symplectic structures. Gualtieri has developed the theory of generalized complex structures and introduced generalized Kähler structures which come with additional conditions [2].

Vaisman introduced the odd-dimensional analog of these structures, generalized almost contact structures, and had defined generalized Sasakian structures from the viewpoint of generalized Kähler structures [7, 8]. He has also defined conformal changes of generalized complex structures and investigated invariant generalized geometry under conformal changes [6]. Poon and Wade have studied integrability conditions of generalized almost contact structures. This framework unifies almost contact, contact and cosymplectic structures [4, 5]. Even more, there is a more general context of generalized contact bundle that is introduced by Vitagliano and Wade [10], in which contact structures do not possess any global contact one-form.

Although Poon-Wade's generalized contact structures are special cases of generalized contact bundles, there are a lot of gaps that can be filled in many special cases, which definitely provide new ideas in more general cases.

In this paper, we consider integrability and normalization of a conformal change of odd-dimensional generalized structures.