

FEDOSOV CONNECTIONS ON KÄHLER SYMMETRIC MANIFOLDS AND TRACE DENSITY COMPUTATION

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Abstract

A Fedosov connection on a Kähler locally symmetric manifold in a compact explicit form was found. The trace density for the corresponding quantization was directly computed.

0. Introduction

In this paper we introduce a Fedosov connection on Kähler locally symmetric manifolds.

Contrary to the case of an arbitrary manifold, this connection appears to be written in a very compact form. A similar construction for an arbitrary Kähler manifold was independently elaborated in [3]. We also compute the trace density for this connection. (See Theorem 2.6). As a result of our computation, the trace density is expressed via geometrical data of the manifold. The final expression resembles a stationary phase approximation for some Feynman path integral. Easy calculation (see section 2) shows that this formula gives the same value as the index theorem for deformations [2], [4]. According to the result of the author [5] which says that any topological invariant on a symplectic manifold expressed in terms of curvature and symplectic form is a polynomial in characteristic classes and symplectic form, to prove the index theorem for deformations it suffices to prove it for Kähler symmetric manifolds. Thus, this yields a new proof of the index theorem for deformations that is parallel to Atiyah-Bott-Patody heat kernel proof.

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