

Deformation Theory of Asymptotically Conical $Spin(7)$ -Instanton

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Abstract

In this talk we discuss the deformation theory of instantons on asymptotically conical $Spin(7)$ -manifolds where the instanton is asymptotic to a fixed nearly G_2 -instanton at infinity. By relating the deformation complex with Dirac operators and spinors, we apply spinorial methods to identify the space of infinitesimal deformations with the kernel of the twisted negative Dirac operator on the asymptotically conical $Spin(7)$ -manifold. Finally we apply this theory to describe deformations of Fairlie-Nuyts-Fubini-Nicolai (FNFN) $Spin(7)$ -instantons on \mathbb{R}^8 , where \mathbb{R}^8 is considered to be an asymptotically conical $Spin(7)$ -manifold asymptotic to the cone over S^7 . We also calculate the virtual dimension of the moduli space using Atiyah-Patodi-Singer index theorem and the spectrum of the twisted Dirac operator.