

Differential And Twistor Geometry Of The Quantum Hopf

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Journal of Differential Geometry - Project Euclid

This book deals with the twistor treatment of certain linear and non-linear partial differential equations in mathematical physics. The description in terms of twistors involves algebraic and differential geometry, and several complex variables, and results in a different kind of setting that gives a new perspective on the properties of space-time and field theories.

Differential and Twistor Geometry of the Quantum Hopf ...

In Penrose's construction of the twistor space of Minkowski spacetime $\mathbb{R}^{1,3}$, we first complexify $\mathbb{R}^{1,3}$ to \mathbb{C}^4 and then think of points in it as matrices acting on \mathbb{C}^2 , which can be depicted as a graph in $\mathbb{C}^2 \oplus \mathbb{C}^2$, which Penrose calls the twistor space.

Differential and Twistor Geometry of the Quantum Hopf ...

We discuss the twistor correspondence between path geometries in three dimensions with vanishing Wilczynski invariants and anti-self-dual conformal structures of signature (2, 2). We show how to reconstruct a system of ODEs with vanishing invariants for a given conformal structure, highlighting the Ricci-flat case in particular.

Twistor Theory | Download eBook pdf, epub, tuebl, mobi

This paper is devoted to give quantitative and qualitative results on the geometry of surfaces in the complex projective space containing finitely or infinitely many twistor lines, i.e. fibers for ...

[1103.0419] Differential and Twistor Geometry of the ...

The quantum fibration is endowed with compatible non-universal differential calculi. By investigating the quantum symmetries of the fibration, we obtain the geometry of the corresponding twistor space $\{\mathbb{C}P^3_q\}$ and use it to study a system of anti-self-duality equations on $\{S^4_q\}$, for which we find an 'instanton' solution coming from the ...

Twistor Geometry of a Pair of Second Order ODEs | SpringerLink

Twistor theory is based on projective geometry and as such has its roots in the 19th century Klein correspondence. It can also be traced back to other areas of mathematics. One such area is the subject now known as integral geometry (the a relationship between twistor theory and integral geometry has been explored by Gindikin [8]). Radon transform.

Twistor theory - Wikipedia

Read "Differential and Twistor Geometry of the Quantum Hopf Fibration, Communications in Mathematical Physics" on DeepDyve, the largest online rental service for scholarly research with thousands of academic publications available at your fingertips.

On Discrete Differential Geometry in Twistor Space

On the quaternionic manifolds whose twistor spaces are Fano manifolds Pantilie, Radu, Tohoku Mathematical Journal, 2015; Totally geodesic submanifolds of regular Sasakian manifolds Murphy, Thomas, Osaka Journal of Mathematics, 2012; Virtual homological torsion of closed hyperbolic 3-manifolds Sun, Hongbin, Journal of Differential Geometry, 2015

Differential and Twistor Geometry of the Quantum Hopf ...

Differential and Twistor Geometry of the Quantum Hopf Fibration Article in Communications in Mathematical Physics 315(2) · March 2011 with 33 Reads How we measure 'reads'

differential geometry - Relationship between the twistor ...

We study a quantum version of the SU(2) Hopf fibration $S^7 \rightarrow S^4$ and its associated twistor geometry. Our quantum sphere S^7_q arises as the unit sphere inside a q-deformed quaternion space \mathbb{H}^2_q .

On discrete differential geometry in twistor space ...

Description : Although twistor theory originated as an approach to the unification of quantum theory and general relativity, twistor correspondences and their generalizations have provided powerful mathematical tools for studying problems in differential geometry, nonlinear equations, and representation theory. At the same time, the theory ...

Differential and Twistor Geometry of the Quantum ... - CORE

arXiv:1103.0419v2 [math.QA] 7 Sep 2012 DIFFERENTIAL AND TWISTOR GEOMETRY OF THE QUANTUM HOPF FIBRATION SIMON BRAIN AND GIOVANNI LANDI Abstract. We study a quantum version of the SU(2) Hopf fibration $S^7 \rightarrow S^4$ and its associated twistor geometry.

Differential And Twistor Geometry Of

Twistor theory was proposed by Roger Penrose in 1967 as a possible path to quantum gravity and has evolved into a branch of theoretical and mathematical physics.Penrose proposed that twistor space should be the basic arena for physics from which space-time itself should emerge. It leads to a powerful set of mathematical tools that have applications to differential and integral geometry ...

DIFFERENTIAL AND TWISTOR GEOMETRY OF THE QUANTUM HOPF ...

Differential and Twistor Geometry of the Quantum Hopf Fibration $\mathbb{H}P^1$. The quantum fibration is endowed with compatible non-universal differential calculi. By investigating the quantum symmetries of the fibration, we obtain the geometry of the corresponding twistor space $\mathbb{C}P^3_q$ and use it to study a system of anti-self ...

Twistor theory and differential equations

Thus, discrete differential geometry in twistor space generalizes the theory of Bobenko and Suris for the Lie quadric. As the twistor viewpoint relies on easy switching between the natural objects of their respective spaces via equivalences, certain constructions in this paper are illustrated by a triptych of equivalent diagrams in the 4-sphere ...

Differential and Twistor Geometry of the Quantum Hopf ...

We study a quantum version of the SU(2) Hopf fibration $S^7 \rightarrow S^4$ and its associated twistor geometry. Our quantum sphere S^7_q arises as the unit sphere inside a q-deformed quaternion space \mathbb{H}^2_q . The resulting four-sphere S^4_q is a quantum analogue of the quaternionic projective space $\mathbb{H}P^1$. The quantum fibration is endowed with compatible non-universal differential calculi ...

Twistor Theory - universe-review.ca

I think this book gives a very good introduction to twistor theory. However, it's not an elementary book. Readers should already be familiar with topology, differential geometry, group theory and general relativity. The book is short, as are the chapters, and it gets to the point quickly.

Amazon.com: Twistor Geometry and Field Theory (Cambridge ...

Spinors and Spin Network Twistor theory has been developed by Roger Penrose and his associates since the 1960s. He realized that using the space-time continuum picture to describe physical processes is inadequate not only at the Planck scale of 10⁻³³ cm but also at the much larger scales of elementary particles, or perhaps atoms, where the quantum effects become important.

Differential and Twistor Geometry of the Quantum Hopf ...

Title: Differential and Twistor Geometry of the Quantum Hopf Fibration Authors: Simon Brain , Giovanni Landi (Submitted on 2 Mar 2011 (v1), last revised 7 Sep 2012 (this version, v2))

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