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Twistor Theory to the Georgi-Glashow SU(5) Model ~~Differential Geometry 4: Frenet-Serret Corollaries~~ ~~Twisted Theory? -- Peter Woit~~ Differential And Twistor Geometry Of

This book deals with the twistor treatment of certain linear and non-linear partial differential equations. The

description in terms of twistors involves algebraic and differential geometry, algebraic ...

Twistor Geometry and Field Theory
The book will provide graduate students with an introduction to the literature of twistor theory, presupposing some knowledge of

special relativity and differential geometry. It would also be of use ...

Deals with the twistor treatment of certain linear and non-linear partial differential equations. The description in terms of twistors involves algebraic and

differential geometry, and several complex variables.

Proceedings from a conference on geometry and partial differential equations.

The Nordic Summer School 1985 presented to young researchers the mathematical aspects of the ongoing research

stemming from the study of field theories in physics and the differential geometry of fibre bundles in mathematics. The volume includes papers, often with original lines of attack, on twistor methods for harmonic maps, the differential geometric aspects of Yang-Mills theory, complex differential

geometry, metric differential geometry and partial differential equations in differential geometry. Most of the papers are of lasting value and provide a good introduction to their subject.

In this monograph on twistor theory and its applications to harmonic map theory, a central

theme is the interplay between the complex homogeneous geometry of flag manifolds and the real homogeneous geometry of symmetric spaces. In particular, flag manifolds are shown to arise as twistor spaces of Riemannian symmetric spaces. Applications of this theory include a complete classification

of stable harmonic 2-spheres in Riemannian symmetric spaces and a Bäcklund transform for harmonic 2-spheres in Lie groups which, in many cases, provides a factorisation theorem for such spheres as well as gap phenomena. The main methods used are those of homogeneous geometry and Lie theory

together with some algebraic geometry of Riemann surfaces. The work addresses differential geometers, especially those with interests in minimal surfaces and homogeneous manifolds.

Evolving from graduate lectures given in London and Oxford, this

introduction to twistor theory and modern geometrical approaches to space-time structure will provide graduate students with the basics of twistor theory, presupposing some knowledge of special relativity and differenttial geometry.

A concise and accessible introduction

to the wide range of topics in geometric approaches to differential equations.

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 continues to offer promising new insights into the nature of quantum theory and gravitation. Further Advances in Twistor Theory, Volume III: Curved Twistor Spaces

is actually the fourth in a series of books compiling articles from Twistor Newsletter-a somewhat informal journal published periodically by the Oxford research group of Roger Penrose. Motivated both by questions in differential geometry and by the quest to find a twistor correspondence for

general Ricci-flat space times, this volume explores deformed twistor spaces and their applications. Articles from the world's leading researchers in this field-including Roger Penrose-have been written in an informal, easy-to-read style and arranged in four chapters, each supplemented by a detailed introduction.

Collectively, they trace the development of the twistor programme over the last 20 years and provide an overview of its recent advances and current status.

In the study of integrable systems, two different approaches in particular have attracted

considerable attention during the past twenty years. (1) The inverse scattering transform (IST), using complex function theory, which has been employed to solve many physically significant equations, the `soliton' equations. (2) Twistor theory, using differential geometry, which has been used to solve the

self-dual Yang--Mills (SDYM) equations, a four-dimensional system having important applications in mathematical physics. Both soliton and the SDYM equations have rich algebraic structures which have been extensively studied. Recently, it has been conjectured that, in some sense, all soliton

equations arise as special cases of the SDYM equations; subsequently many have been discovered as either exact or asymptotic reductions of the SDYM equations. Consequently what seems to be emerging is that a natural, physically significant system such as the SDYM equations provides the basis for a

unifying framework underlying this class of integrable systems, i.e. `soliton' systems. This book contains several articles on the reduction of the SDYM equations to soliton equations and the relationship between the IST and twistor methods. The majority of nonlinear evolution equations are nonintegrable, and so

asymptotic, numerical perturbation and reduction techniques are often used to study such equations. This book also contains articles on perturbed soliton equations. Painlevé analysis of partial differential equations, studies of the Painlevé equations and symmetry reductions of nonlinear partial differential

equations. (ABSTRACT) In the study of integrable systems, two different approaches in particular have attracted considerable attention during the past twenty years; the inverse scattering transform (IST), for `soliton' equations and twistor theory, for the self-dual Yang--Mills (SDYM)

equations. This book contains several articles on the reduction of the SDYM equations to soliton equations and the relationship between the IST and twistor methods. Additionally, it contains articles on perturbed soliton equations, Painlevé analysis of partial differential equations, studies of the Painlevé

equations and symmetry reductions of nonlinear partial differential equations.

Comprehensive coverage of the foundations, applications, recent developments, and future of conformal differential geometry Conformal Differential Geometry and Its

Generalizations is the first and only text that systematically presents the foundations and manifestations of conformal differential geometry. It offers the first unified presentation of the subject, which was established more than a century ago. The text is divided into seven chapters, each containing figures,

formulas, and historical and bibliographical notes, while numerous examples elucidate the necessary theory. Clear, focused, and expertly synthesized, Conformal Differential Geometry and Its Generalizations * Develops the theory of hypersurfaces and submanifolds of any dimension of conformal and pseudoconformal

spaces. * Investigates conformal and pseudoconformal structures on a manifold of arbitrary dimension, derives their structure equations, and explores their tensor of conformal curvature. * Analyzes the real theory of four-dimensional conformal structures of all possible signatures. * Considers the analytic

and differential geometry of Grassmann and almost Grassmann structures. * Draws connections between almost Grassmann structures and web theory. Conformal differential geometry, a part of classical differential geometry, was founded at the turn of the century and gave rise to the study of

conformal and almost Grassmann structures in later years. Until now, no book has offered a systematic presentation of the multidimensional conformal differential geometry and the conformal and almost Grassmann structures. After years of intense research at their respective universities and at the Soviet School

of Differential Geometry, Maks A. Akivis and Vladislav V. Goldberg have written this well-conceived, expertly executed volume to fill a void in the literature. Dr. Akivis and Dr. Goldberg supply a deep foundation, applications, numerous examples, and recent developments in the field. Many of the

findings that fill these pages are published here for the first time, and previously published results are reexamined in a unified context. The geometry and theory of conformal and pseudoconformal spaces of arbitrary dimension, as well as the theory of Grassmann and almost Grassmann structures, are discussed and

analyzed in detail. The topics covered not only advance the subject itself, but pose important questions for future investigations. This exhaustive, groundbreaking text combines the classical results and recent developments and findings. This volume is intended for graduate students and researchers

of differential geometry. It can be especially useful to those students and researchers who are interested in conformal and Grassmann differential geometry and their applications to theoretical physics.