

Modulbeschreibung für Vertiefungsmodule des Wahlpflichtbereiches

Titel des Moduls	Infinite Lie Algebras and Martingales
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R	
A	X

	Vorlesung	Übung
Umfang	2 SWS	

Inhalt	<p>A major development of the last decade was the realisation that infinite-dimensional Lie algebras, in particular the Virasoro algebra, are intimately connected with a class of stochastic processes, namely SLE and Brownian motion on the group of diffeomorphism of the circle, which are diffusion processes on infinite dimensional spaces, related to holomorphic functions.</p> <p>This new perspective not only opened up the way to a deeper understanding of scaling limits of random curves on two-dimensional surfaces but also gave unexpected connections with Conformal Field Theory.</p> <p>The aim of this lecture course is two-fold. First we shall give a concise and self-contained introduction to the representation theory of infinite Lie algebras, with the Witt-Virasoro algebra as our main example and model. Then we shall define and introduce the class of stochastic processes we have in mind, and finally give the representation theory of these algebras on certain spaces of local martingales, associated with the processes themselves. Throughout the lectures we shall emphasise and illustrate the close connections with mathematical physics.</p> <p>The lecture course is of interest to both mathematicians and physicists, and it will lead up to questions of current research.</p>
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Voraussetzungen	Fundamentals of Stochastic Calculus
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Regelsemester	entfällt
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Abschluss	Prüfung
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Prüfungszulassungsvoraussetzung	keine
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Studienpunkte	4
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R = Reine Mathematik
A = Angewandte Mathematik