Gauge Theories in Higher Dimensions

Riemann Workshop at Leibniz Universität Hannover, August 11 - 14, 2014
Organizers: Roger Bielawski, Olaf Lechtenfeld, Ulrich Theis

Yang-Mills theory was formulated in 1954 and became an essential ingredient in the Standard Model of particle physics in the 1970s. At the end of that decade, important solutions to the Yang-Mills equations (monopoles, instantons) were discovered in physics and their moduli spaces were constructed in mathematics. These seminal studies took place on four-dimensional (space-time) manifolds. Fuelled by the advance of string theory and the need of compactification on 6- or 7-dimensional internal spaces with special structures, Yang-Mills theory in higher dimensions has become a wide field of contemporary research since the mid-eighties, in mathematics and theoretical physics alike.

This workshop intends to bring together active researchers from both areas for an exchange on the subject, in particular regarding topics such as

- Instantonic solutions and their moduli spaces
- Supersymmetric extensions
- Conformal field theories and twistor methods
- Donaldson-Thomas invariants

The program consists of 50-minute talks by invited participants beginning on Monday morning and ending at noon on Thursday, with late Tuesday afternoon free for excursions or other activities.

Full list of titles and abstracts of the talks — **Program**

The registration for this workshop is closed.

The workshop takes place in the University's main building Welfenschloss (Welfengarten 1, 30167 Hannover, Germany). — **Directions**

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Program

Click on a link below to download a speaker's PDF file or - in the case of a blackboard talk - be led to an arXiv preprint corresponding to the speaker's topic.

Time	Monday	Tuesday	Wednesday	Thursday
09:00	Sämann	Sparks	Haydys	Lockhart
10:00	Wolf	Terashima	Walpuski	Imamura
11:00	*Break*	*Break*	*Break*	*Break*
11:30	Cherkis	Martelli	Tanaka	Zabzine
12:30	*Lunch*	*Lunch*	*Lunch*	*Departure*
14:00	Jardim	Clarke	Harland	
15:00	Hosomichi	Salamon	Sá Earp	
16:00	*Break*	*End*	*Break*	
16:30	Bunk		Cao	
17:30	*End*		*End*	

TALKS

- **Severin Bunk:** *Instantons on conical extensions of Sasakian manifolds*
- **Yalong Cao:** *Donaldson-Thomas theory for Calabi-Yau four-folds*
- **Sergey Cherkis:** *Octonionic Monopoles*
- **Andrew Clarke:** ***Instantons on the manifolds of Bryant and Salamon***
- **Derek Harland:** ***Perturbations of nearly Kähler instantons***
- **Andriy Haydys:** ***Fueter sections and gauge theory***
- **Kazuo Hosomichi:** *Self-Dual Strings and 2D SYM*
- **Yosuke Imamura:** *Supersymmetric backgrounds from 5d N=1 supergravity*
- **Marcos Jardim:** ***Boundary of the moduli space of instanton bundles on P^3***
- **Guglielmo Lockhart:** *E-string elliptic genus from domain walls*
- **Dario Martelli:** *Supersymmetric localization and the gauge/gravity duality*
- **Henrique Sá Earp:** *G_2-instantons over twisted connected sums*
- **Simon Salamon:** *Instantons defined by Lie groups*
- **Christian Sämann:** *Higher Gauge Theory and M-theory*
- **James Sparks:** *Exact results in AdS/CFT from localization*
- **Yuuji Tanaka:** *A construction of Spin(7)-instantons*
- **Seiji Terashima:** *On M5-branes in ABJM theory*
- **Thomas Walpuski:**
  A compactness theorem for the Seiberg–Witten equation with multiple spinors in dimension three
- **Martin Wolf:** *Self-Dual Higher Gauge Theory*
- **Maxim Zabzine:** *5D supersymmetric Yang-Mills on toric Sasaki-Einstein manifolds*