Banff International Research Station

for Mathematical Innovation and Discovery

# GEOMETRIC STRUCTURES ON MANIFOLDS
# April 15-20, 2012

## MEALS

*Breakfast (Buffet): 7:00–9:30 am, Sally Borden Building, Monday–Friday
*Lunch (Buffet): 11:30 am–1:30 pm, Sally Borden Building, Monday–Friday
*Dinner (Buffet): 5:30–7:30 pm, Sally Borden Building, Sunday–Thursday
Coffee Breaks: As per daily schedule, in the foyer of the TransCanada Pipeline Pavilion (TCPL)
***Please remember to scan your meal card at the host/hostess station in the dining room for each meal.**

## MEETING ROOMS

All lectures will be held in the new lecture theater in the TransCanada Pipelines Pavilion (TCPL). LCD projector and blackboards are available for presentations.

5-day workshop participants are welcome to use BIRS facilities (BIRS Coffee Lounge, TCPL and Reading Room) until 3 pm on Friday, although participants are still required to checkout of the guest rooms by 12 noon.

## SCHEDULE

### Sunday

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| 16:00 | Check-in begins (Front Desk - Professional Development Centre - open 24 hours) |
| 17:30–19:30 | Buffet Dinner, Sally Borden Building |
| 20:00 | Informal gathering in 2nd floor lounge, Corbett Hall<br>Beverages and an assortment of snacks are available on a cash honour system. |

### Monday

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| 7:00–8:45 | Breakfast |
| 8:45–9:00 | Introduction and Welcome by BIRS Station Manager, TCPL |
| 9:00-9:45 | Robert Bryant (MSRI): *An introduction to $G_2$ and $Spin(7)$ manifolds.* |
| 10:00-10:45 | Andras Stipsicz (Budapest): *Knots in Lattice homology* |
| 10:45-11:15 | **Coffee Break**, TCPL. |
| 11:15-12:00 | Ludmil Katzarkov (Miami): *From Higgs bundles to stability conditions* |
| 12:00–13:00 | Lunch |
| 13:00–14:00 | Guided Tour of The Banff Centre; meet in the 2nd floor lounge, Corbett Hall |
| 14:00 | **Group Photo**: meet in foyer of TCPL. |
| 15:30-16:00 | **Coffee Break**, TCPL. |
| 16:00-16:45 | Claude LeBrun (Stony Brook): *Four-Manifolds, Einstein Metrics, and Differential Topology* |
| 17:00-17:45 | Timothy Perutz (Austin): *Arithmetic aspects of homological mirror symmetry* |
| 17:45–19:30 | Dinner |

**Tuesday**

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|---|---|
| 7:00–9:00 | Breakfast |
| 9:00-9:45 | Matt Hedden (Michigan State): *Recent progress on topologically slice knots* |
| 10:00-10:45 | Olivier Biquard (Paris): *Desingularization of Einstein orbifolds* |
| 10:45-11:15 | **Coffee Break**, TCPL. |
| 11:15-12:00 | Dmitry Alekseevsky (Brno): *Compact cohomogeneity one Kähler and Kähler–Einstein manifolds* |
| 12:00–13:00 | Lunch |
| 15:30-16:00 | **Coffee Break**, TCPL. |
| 16:00-16:45 | Jonathan Hillman (Sydney): *The homotopy types of geometric 4-manifolds* |
| 17:00-17:45 | Thomas Walpuski (Imperial College): *A conjectural G2 Casson invariant* |
| 17:45–19:30 | Dinner |

**Wednesday**

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|---|---|
| 7:00–9:00 | Breakfast |
| 9:00-9:45 | Mihaela Pilca (Regenburg): *Lowest eigenvalue of the Dirac operator on Kähler manifolds and special holonomy* |
| 10:00-10:45 | Weimin Chen (Amherst): *On Seifert fibered 4-manifolds* |
| 10:45-11:15 | **Coffee Break**, TCPL. |
| 11:15-12:00 | Andrei Teleman (Provence): *Gauge theoretical approach in the classification of class VII surfaces* |
| 12:00–13:00 | Lunch |
| 15:30-16:00 | **Coffee Break**, TCPL. |
| 16:00-16:45 | Tim Nguyen (Stony Brook): *Quantum Chern-Simons Theory and Perturbative Renormalization* |
| 17:00-17:45 | Liviu Nicolaescu (Notre Dame): *Complexity of random smooth functions on compact manifolds* |
| 17:45–19:30 | Dinner |

**Thursday**

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|---|---|
| 7:00–9:00 | Breakfast |
| 9:00-9:45 | YankI Lekili (Cambridge): *Floer theoretically essential tori in rational blowdown* |
| 10:00-10:45 | Scott Baldridge (Louisiana): *Coisotropic Luttinger Surgery on Symplectic 6-Manifolds* |
| 10:45-11:15 | **Coffee Break**, TCPL. |
| 11:15-12:00 | Andrew Swann (Aarhus): *Multi-moment maps and applications to special holonomy* |
| 12:00–13:00 | Lunch |
| 15:30-16:00 | **Coffee Break**, TCPL. |
| 16:00-16:45 | Gil Cavalcanti (Utrecht): *Generalized Hermitian structures: Intrinsic torsion and Hodge theory* |
| 17:00-17:45 | Katrin Wehrheim (MIT): *How to construct 4-manifold invariants via the symplectic category* |
| 17:45–19:30 | Dinner |

**Friday**

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|---|---|
| 7:00–9:00 | Breakfast |
| 9:00 | Informal discussions) |
| 11:30–13:30 | Lunch |

**Checkout from the Banff Centre: by 12 noon.**