# Banff International Research Station
### for Mathematical Innovation and Discovery

## Number Theory and Physics at the Crossroads
## May 8–13, 2011

### 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, 2nd floor lounge, Corbett Hall
**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 Max Bell 159 (Max Bell Building accessible by walkway on 2nd floor of Corbett Hall). LCD projector, overhead projectors and blackboards are available for presentations.**

*Please note that the meeting space designated for BIRS is the lower level of Max Bell, Rooms 155–159. Please respect that all other space has been contracted to other Banff Centre guests, including any Food and Beverage in those areas.*

# THE BIRS FIVE DAY WORKSHOP
## NUMBER THEORY AND PHYSICS AT THE CROSSROADS
## MAY 8–13, 2011
## WORKSHOP SCHEDULE

|  | May 9 | May 10 | May 11 | May 12 | May 13 |
|---|---|---|---|---|---|
| 9:00am–9:20 am | Organizer(s) |  |  |  |  |
| 9:30am–10:30am | Villegas | Kerr | Rohde | Sebbar | Whitcher |
| 11:00am–12:00 | Clingher | Bogner | Hosono | Pioline | Stienstra |
| 12:00 | LUNCH |  |  |  |  |
| 2:30pm–3:30pm | Song | Movasati |  | Galkin |  |
| 4:00pm–5.00 pm | Manshot | Ballard | FREE AFTERNOON | Szendroi | Departure |
| 5:30 pm | DINNER |  |  |  |  |
| 7:30 pm–8:30pm | Boucherds | Gannon | Morrison | Gunnells |  |
| 8:30 pm–9:30pm | Brown | Walcher | Klemm | Mulase |  |

## SCHEDULE

**Sunday, May 8**

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

**Monday, May 9**

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| **7:00–8:45** | Breakfast |
| **8:45–9:00** | Introduction and Welcome to BIRS by BIRS Station Manager, Max Bell 159 |
| **9:00–9:20** | Organizer(s): *Overview of the workshop* |
| **9:30–10:30** | F. Rodriguez-Villegas: *The A-polynomial at $q = 1$, the dilogarithm and the asymptotics of q-series* |
| **10:30–11:00** | Coffee Break, 2nd floor lounge, Corbett Hall |
| **11:00–12:00** | A. Clingher: *On a family of $K3$ surfaces of Picard rank* 16 |
| **12:00–13:00** | Lunch |
| **13:00–14:00** | Guided Tour of The Banff Centre; meet in the 2nd floor lounge, Corbett Hall |
| **14:30–15:30** | R. Song: *The Picard–Fuchs systems of Calabi–Yau complete intersections in partial flag varieties* |
| **15:30–16:00** | Coffee Break, 2nd floor lounge, Corbett Hall |
| **16:00–17:00** | J. Manshot : *The Betti numbers of moduli spaces of sheaves on the projective plane* |
| **17:30–19:30** | Dinner |
| **19:30–20:30** | V. Bouchard: *The geometry of mirror curves* |
| **20:30–21:30** | F. Brown: *Modular forms in quantum field theory* |
| **21:30–** | Welcoming Party, the 2nd floor lounge, Corbett Hall |

**Tuesday, May 10**

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| **7:00–9:00** | Breakfast |
| **9:30–10:30** | M. Kerr : *On isotrivial families of $K3$ surfaces* |
| **10:30–11:00** | Coffee Break, 2nd floor lounge, Corbett Hall |
| **11:00–12:00** | M. Bogner : *Symplectically rigid monodromy tuples induced by fourth order differential Calabi–Yau operators* |
| **12:00** | Group Photo: At the Front Steps of Corbett Hall |
| **12:00–13:30** | Lunch |
| **14:30–15:30** | H. Movasati: *Mirror quintic Calabi–Yau modular forms* |
| **15:30–16:00** | Coffee Break, 2nd floor lounge, Corbett Hall |
| **16:00–17:00** | M. Ballard: *Matrix factorization categories for complete intersections with applications to Orlov spectra of triangulated categories* |
| **17:30–19:30** | Dinner |
| **19:30–20:30** | T. Gannon: *Vector-valued automorphic forms and the Riemann–Hilbert problem* |
| **20:30–21:30** | J. Walcher: *New normal functions for Calabi–Yau threefolds* |

**Wednesday, May 11**

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| **7:00–9:00** | Breakfast |
| **9:30–10:30** | J. C. Rohde: *Maximal automorphisms of Calabi–Yau manifolds versus maximally unipotent monodromy* |
| **10:30–11:0** | Coffee Break, 2nd floor lounge, Corbett Hall |
| **11:00–12:00** | S. Hosono: *Mirror symmetry and projective geometry of Reye congruences* |
| **12:00–13:30** | Lunch |
| | Free Afternoon |
| **17:30–19:30** | Dinner |
| **19:30–20:30** | D. Morrison *K3 surfaces, modular forms, and non-geometric heterotic compactifications* |
| **20:30–21:30** | A. Klemm *Omega backgrounds and generalized holomorphic anomaly equats* |
| **21:30–** | *Problem Session* |

**Thursday, May 12**

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| **7:00–9:00** | Breakfast |
| **9:30–10:30** | A. Sebbar: *On the critical points of modular forms* |
| **10:30–11:00** | Coffee Break, 2nd floor lounge, Corbett Hall |
| **11:00–12:00** | B. Pioline: *Automorphy in hypermultiplet moduli spaces* |
| **12:00–14:30** | Lunch |
| **14:30–15:30** | S. Galkin: *Fano and Mathieu* |
| **15:30–16:00** | Coffee Break, 2nd floor lounge, Corbett Hall |
| **16:00–17:00** | B. Szendroi *Motivic DT theory of some local Calabi–Yau threefolds* |
| **17:30–19:30** | Dinner |
| **19:30–20:30** | P. Gunnells :*Metaplectic Whittaker functions and lattice models* |
| **20:30–21:30** | M. Mulase: *A topological recursion in B-model as the Laplace transform of a combinatorial equation* |

**Friday, May 13**

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| **7:00–9:30** | Breakfast |
| **9:30–10:30** | U. Whitcher: *K3 surfaces and $S_4$ symmetry* |
| **10:30–11:00** | Coffee Break, 2nd floor lounge, Corbett Hall, Check out during this break |
| **11:00–12:00** | J. Stienstra: *Dimer models and hypergeometric systems* |
| **12:00–13:30** | Lunch |

**Checkout by 12 noon.**


** 5-day workshops are welcome to use the BIRS facilities (2nd Floor Lounge, Max Bell Meeting Rooms, Reading Room) until 3 pm on Friday, although participants are still required to checkout of the guest rooms by 12 noon. **