

Mathematics of Communications: Sequences, Codes and Designs

BIRS, 25–30 January 2015

Monday 26 January

- 8:45–9:00 Welcome and introduction to BIRS
- 9:00–10:00 Tuvi Etzion (expository speaker)
Codes and designs
- 10:00–10:30 Coffee
- 10:30–11:00 Anant Sahai
Design of identity codes
- 11:00–11:30 Bernardo Rodrigues
Complementary dual codes related to the Hoffman-Singleton and Higman-Sims graphs
- 11:30–12:00 Daniel Panario
The number of irreducible transformation shift registers
- 12:00–1:30 Lunch
- 1:30–2:30 James Davis
Apple vs. Samsung and coding theory
- 2:30–2:45 Group photo
- 2:45–3:15 Coffee
- 3:15–4:15 Tour of the Banff Centre
- 4:15–6:15 Private discussion
- 6:15–7:30 Dinner

Tuesday 27 January

- 9:00–10:00 Emina Soljanin (expository speaker)
Network coding: a combinatorial framework and an open problem
- 10:00–10:30 Coffee
- 10:30–11:00 Florian Caullery
Testing the reliability of a true random numbers generator at run time
- 11:00–11:30 Charlie Colbourn
Crosstalk avoidance in on-chip data buses
- 11:30–12:00 Dimitri Leemans
On primitive geometries of rank two
- 12:00–1:30 Lunch
- 1:30–2:00 Relinde Jurrius
The extended and generalized rank weight enumerator
- 2:00–2:30 Dean Crnković
Self-orthogonal or self-dual codes from orbit matrices of block designs
- 2:30–3:00 Kai-Uwe Schmidt
Symmetric matrices over finite fields with applications to coding theory
- 3:00–3:30 Coffee
- 3:30–6:15 Private discussion
- 6:15–7:30 Dinner

Wednesday 28 January

- 9:00–10:00 Alex Pott (expository speaker)
PN functions, APN functions and difference sets
- 10:00–10:30 Coffee
- 10:30–11:00 Petr Lisoněk
APN permutations and double simplex codes
- 11:00–11:30 Bernhard Schmidt
Weil numbers, group rings, and unique differences
- 11:30–12:00 Yin Tan
Quadratic zero-difference balanced functions, APN functions and strongly regular graphs
- 12:00–1:30 Lunch
- 1:30–2:30 Alexander Fish (expository speaker)
Sequences for complexity issues in channel estimation
- 2:30–3:00 Anna-Lena Trautmann
Gabidulin decoding via minimal bases of linearized polynomial modules
- 3:00–3:30 Coffee
- 3:30–6:15 Private discussion
- 6:15–7:30 Dinner

Thursday 29 January

- 9:00–10:00 Bill Martin (expository speaker)
Quantum information theory
- 10:00–10:30 Coffee
- 10:30–11:00 Matthew Parker
Constructions for complementary and near-complementary arrays and sequences using MUBs and tight frames, respectively
- 11:00–11:30 Daniel Katz
Three-level cross-correlation of m -sequences and three-weight cyclic codes
- 11:30–12:00 Jon-Lark Kim
Complementary information set codes from SRG, DRT, and matroids
- 12:00–1:30 Lunch
- 1:30–2:00 Yue Zhou
Monomial negabent functions
- 2:00–2:30 John Sheekey
Maximum rank distance codes and finite semifields
- 2:30–3:00 Coffee
- 3:00–4:30 Panel discussion with Claude Carlet, Charlie Colbourn, Bill Martin, and Anant Sahai
Future research directions in the mathematics of communications
- 4:30–6:15 Private discussion
- 6:15–7:30 Dinner

Friday 30 January

9:00–10:00 Group discussion (open problems session?)

10:00–10:30 Coffee

10:30–12:00 Group discussion (open problems session?)