**ANTA/COST WORKSHOP ON ALGEBRA, NUMBER THEORY, AND APPLICATIONS TO COMMUNICATIONS AND COMPUTING**

**January 22-23 2015, Aalto University, Otakaari 1, Espoo, Finland, R001/A034**

Organized by Marcus Greferath, Camilla Hollanti, Gunes Kurt, and Vitaly Skachek

Coffee will be served in the morning and during the afternoon breaks. Lunch is at your own expense. Friday after the lectures we will have a gathering with some food and drinks.

Check http://math.aalto.fi/en/research/discrete/anta/seminar.html for last-minute program updates.

**Thursday January 22**

9:00-9:45
**Thomas Westerbäck** (Aalto University)
Matroids and connections to distributed data storage (joint with Toni Ernvall, Ragnar Freij, and Camilla Hollanti)

9:45-10:10
**Klara Stokes** (Univeristy of Skövde)
Using the Klein correspondence for decoding spread subspace codes

10:10-10:30
**Peter Farkaš** (Slovak University of Technology in Bratislava and Pan-European University)
Transmission technique exploiting wireless network coding and feedback for one networking scenario (joint with Eugen Ružický, Pan-European University)

10:30-10:50 **Break**

10:50-11:30
**Marcus Greferath** (Aalto University/University College Dublin)
t-designs and a decomposition theory with applications to communications (joint with Mario Pavcevic, University of Zagreb in the context COST Action IC1104)

11:30-12:15
**Riikka Kangaslampi** (Aalto University)
Hyperbolic buildings

12:15-14:15 **Lunch**

14:15-14:45
**Vitaly Skachek** (University of Tartu)
Subspace synchronization: a network-coding approach to object reconciliation (joint with Michael Rabbat)

14:45-15:15
**Anne-Maria Ernvall-Hytönen** (University of Helsinki)
Belfiore-Solé conjecture on l-modular lattices

15:15-15:45
**Nalin Jayakody** (University of Tartu)
A soft network coded multilevel forwarding scheme for multiple access relay systems

15:45-16:00 **Break**

16:00-16:30
**Mario Di Francesco** (Aalto University)
From wireless sensors to services through data collection

16:30-17:00
**Oliver Gnilke** (Aalto University)
Semigroup actions in cryptography

**Friday January 23**

9:30-10:15
**Petteri Kaski** (Aalto University)
Engineering motif search for large graphs (joint work with Andreas Björklund, Łukasz Kowalik, and Juho Lauri)

10:15-10:45
**Renaud-Alexandre Pitaval** (Aalto University)
Flag orbit codes (joint with Olav Tirkkonen)

10:45-11:00 **Break**

11:00-11:40
**Olav Tirkkonen** (Aalto University)
Collaborative device-to-device communities

11:40-12:00
**Joonas Pääkkönen** (Aalto University)
Device-to-device storage for mobile networks with rateless coding

12:00-12:30
**Majid Gerami** (KTH)
Partial repair for wireless caching networks with broadcast channels

12:30-14:00 **Lunch**

14:00-14:45
**Guneš Kurt** (Istanbul Technical University)
Network coded cooperation over wireless channels

14:45-15:30
**Amaro Barreal** (Aalto University)
Decision-based decoding of 4 x 4 space-time block codes (joint with David Karpuk and Camilla Hollanti)

15:30-15:45 **Break**

15:45-16:15
**David Karpuk** (Aalto University)
channel pre-inversion and interference alignment (joint with Peter Moss)

16:15-16:45
**Lu Wei** (University of Helsinki)
Volume of a metric ball in unitary group and the Mock-Gaussian behavior (joint with Renaud-Alexandre Pitaval, Olav Tirkkonen, and Jukka Corander)

17:00--> **Free loitering and catering**