

DIMACS-GERAD Workshop on

«Computers and Discovery»

June 2-5, 2004

HEC Montréal
3000, chemin de la Côte-Sainte-Catherine
Montréal (Québec) H3T 2A7
Room Meloche Monnex, first floor (green section)

❖ Wednesday, June 2

- 9:00 Pierre Hansen, GERAD and HEC Montréal
Welcome
- 9:05 Jonathan M. Borwein, Dalhousie University, Canada
Experimentation in mathematics: computational paths to discovery
- 10:05 Mark Goldberg, Rensselaer Polytechnic Institute, USA
Experimental Asymptotics: how much experimentation is enough
- 10:35 Coffee break
- 11:00 Gunnar Brinkmann, Gent University, Belgium
Generating benzenoids and fusenes with perfect matchings
- 11:30 Hadrien Mélot, University of Mons, Belgium
Facet defining inequalities among graph invariants: the system GraPHedron
- 12:00 Hadrien Mélot, University of Mons, Belgium
Demonstration of system GraPHedron
- 12:30 Lunch break
- 2:00 Stephen Muggleton, Imperial College, London, Great Britain
The robot scientist
- 3:00 Jack. E. Graver, Syracuse University, USA
The independence numbers of fullerenes and their duals
- 3:30 Coffee break
- 4:00 Mikhail Klin, University of Delaware, USA
Regular subgroups of collineation groups of proper finite loops: From a computer experiment to an infinite series of examples.
- 4:30 Mikhail Klin, University of Delaware, USA
Demonstration of system COCO

Room Samson-Bélair-Deloitte-Touche (4th floor – North elevator)

- 5:30 Inauguration of HEC Data Mining Chair and Cocktail
Participants to the Workshop are kindly invited

❖ Thursday, June 3

- 9:00 Patrick Langley, Stanford University, USA
Computational induction of explanatory process models
- 10:00 Dragan Stevanovic, University of Nis, Serbia and Montenegro
Using NewGRAPH in research and teaching
- 10:30 Coffee break
- 10:50 Ermelinda Delavina, University of Houston, Texas, USA
The Dalmation heuristic
- 11:50 Mustapha Aouchiche, École Polytechnique, Canada
Conjectures about average distance in graphs
- 12:20 Lunch break
- 2:00 Shang-Ching Chou, Wichita State University, Kansas, USA
Machine proofs and discovery in geometries
- 3:00 Charles Audet, GERAD and École Polytechnique, Canada
Vincze's wife's octagon is suboptimal
- 3:30 Coffee break
- 4:00 David Avis, GERAD and McGill University, Canada
All meals for a dollar, Nash Equilibria and other vertex enumeration problems
- 4:30 Ermelinda Delavina, University of Houston, Texas, USA
Demonstration of system « Graffiti.pc »

❖ Friday, June 4

- 9:00 David H. Bailey, Lawrence Berkeley National Lab, California, USA
Experimental mathematics: discovering new formulas and theorems
- 10:00 Simon Plouffe, Montréal, Canada
A search for a mathematical expression of mass ratio using a large database
- 10:30 Coffee break
- 10:50 Patrick W. Fowler, Exeter University, Great-Britain
Non-bonding orbitals: much ado about nothing
- 11:20 Reinhard Laue, University of Bayreuth, Germany
Challenges for group actions from t-design construction problems
- 11:50 Wendy Myrvold, University of Victoria, Canada
Generating small combinatorial objects
- 12:20 Lunch break
- 2:00 Simon Colton, Imperial College, London, Great-Britain
The HR project – hits and misses
- 3:00 Nair Abreu, Federal University of Rio, Brazil
Bounds on the algebraic connectivity of a graph
- 3:30 Coffee break
- 4:00 Pierre Hansen, GERAD and HEC Montréal, Canada
Exploring graph theory with AutoGraphiX

- 4:30 Simon Colton, Imperial College, London, Great-Britain
Demonstration of system HR
- 5:00 Gilles Caporossi, GERAD and HEC Montréal, Canada
Demonstration of system AGX2
- 6:00 Room L'Oréal (rez-de-jardin)
Cocktail party followed by Conference Banquet

❖ Saturday June 5

- 9:00 Mathieu Dutour, École Normale Supérieure, Paris, France
Zigzags and central circuits for 3- and 4-value plane graphs
- 10:00 Yoshua Bengio, University of Montréal, Canada
Learning the density structure of high-dimensional data
- 10:30 Coffee break
- 11:00 Shengrui Wang, University of Sherbrooke, Canada
Cluster analysis on graph data
- 11:30 Robert Cowen, Queens College, Flushing, NY, USA
Computer-assisted investigations for the paper «Odd Neighborhood Transversals for Grid Graphs»
- 12:00 Sandra Kingan, Penn State University, USA
Excluded minor results in matroids
- 12:30 Lunch break
- 2:00 Vladimir Brankov, University of Nis, Serbia and Montenegro
NewGRAPH architecture
- 2:30 Dragan Stevanovic, University of Nis, Serbia and Montenegro
Demonstration of system NewGRAPH
- 3:00 Coffee break
- 3:30 Claudia Justus, Bielefeld University, Germany
Numbers of faces in disordered patches
- 4:00 Gilles Caporossi, GERAD and HEC Montréal, Canada
Automated proof of simple conjectures in graph theory