



INFO SHEET

November 2, 2010

QUEEN'S UNIVERSITY AT KINGSTON
Department of Mathematics and Statistics
<http://www.mast.queensu.ca>

CALENDAR		
Wednesday, November 3	Department Meeting Time: 3:30 p.m. Place: Jeffery 234	Dean and Associate Dean of Arts & Science will visit during the departmental meeting time. Time permitting, the normal department meeting will start immediately following visit.
Friday, November 5	Number Theory Seminar Time: 11:30 a.m. – 12:20 p.m. Place: Jeffery 422	Speaker: Rob Wang, Queen's University Title: Zeros of Ramanujan Polynomials Abstract Attached
Friday, November 5	Department Colloquium Time: 2:30 p.m. Place: Jeffery 234	Speaker: Aaron Wagner, Cornell University Title: Estimation and Classification in the Learning-Limited Regime Abstract Attached
Monday, November 8	Algebraic Geometry Seminar Time: 4:30 p.m. – 5:30 p.m. Place: Jeffery 319	Speaker: Eckhard Meinrenken, University of Toronto Title: Twisted spin-c structures on conjugacy classes Abstract Attached
Monday, November 8	Seminar on Free Probability and Random Matrice Time: 4:30 p.m. – 6:00 p.m. Place: Jeffery 102	Speaker: Michael Brannan, Queen's University Title: Quantum symmetries and a strong form of Haagerup's inequality, Part II Abstract Attached

Items for the Info Sheet should reach Anne (burnsa@mast.queensu.ca) by noon on Monday. The Info Sheet is published every Tuesday.

Friday, November 5, 11:30 a.m. Jeffery 422

Number Theory Seminar

Speaker: Rob Wang

Title: Zeros of Ramanujan Polynomials

Abstract: I would like to discuss the properties of Ramanujan polynomials, a family of reciprocal polynomials originating from Ramanujan's work. Specifically, I will show that the nonreal zeros of Ramanujan polynomials lie on the unit circle and provide asymptotic bounds on the magnitudes of the real zeros. Furthermore, I will specify the zeros of Ramanujan polynomials that are roots of unity. This is joint work with M. Ram Murty (Queen's University) and Chris Smyth (University of Edinburgh).

Friday, November 5, 2:30 p.m. Jeffery 234

Department Colloquium

Speaker: Aaron Wagner

Title: Estimation and Classification in the Learning-Limited Regime

Abstract: Motivated by models of natural language, we consider estimation and classification in the asymptotic regime where the source alphabet grows linearly with the number of observations. We show that, although the underlying distribution cannot be learned in this regime, it is possible to consistently estimate its entropy, the likelihood of the observed string, the divergence between the true and empirical distributions, and other similar quantities. We also show that consistent classification is possible, although

standard tests such as the generalized likelihood ratio test, the chi-squared test, and the Hellinger test are all inconsistent in this regime. In fact, consistent classification is possible if the alphabet grows subquadratically with the number of observations, and it is impossible if the alphabet grows quadratically or faster.

This is joint work with Benjamin Kelly, Thitidej Tularak, Pramod Viswanath, and Sanjeev Kulkarni.

Monday, November 8, 4:30 p.m. Jeffery 319

Algebraic Geometry Seminar

Speaker: Eckhard Meinrenken

Title: Twisted spin-c structures on conjugacy classes

Abstract: Let G be a compact simple Lie group. An essential ingredient in the Borel-Weil construction of irreducible G -representations is the fact coadjoint orbits carry distinguished Kähler structures. This Kähler structure defines in particular a spin-c structure on \mathfrak{O} . In this talk, I will explain that similarly, conjugacy classes C in G carry distinguished 'twisted spin-c' structures. These feature in a construction of generators of the level k fusion ring of G . This talk is based on joint work with A. Alekseev.

Monday, November 8, 4:30 p.m. Jeffery 102

Seminar on Free Probability and Random Matrices

Speaker: Michael Brannan

Title: Quantum symmetries and a strong form of Haagerup's inequality, Part II

Abstract: Haagerup's inequality is an important inequality in the field of operator algebras, having many interesting and surprising applications. In this talk we will give an overview of Haagerup's inequality and its connection to free probability theory. We will then go on to outline the proof of the following new result: Consider an n -tuple of operators in a C^* -probability space whose joint $*$ -distribution possesses a certain degree quantum symmetry - namely we require that the $*$ -distribution be invariant under the operation of free complexification and the natural coaction of the hyperoctahedral quantum group. Then it follows that the non-self-adjoint operator algebra generated this family always satisfies a strong form of Haagerup's inequality.

We will conclude by showing how this result generalizes work of Kemp and Speicher (2007) on strong Haagerup inequalities for $*$ -free, identically distributed families of R -diagonal operators, and by discussing some applications to strong Haagerup inequalities for free unitary quantum groups.