<table>
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<tr>
<th>Date</th>
<th>Event</th>
<th>Time</th>
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<th>Speaker</th>
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<tr>
<td>Wednesday, March 16</td>
<td>Curves Seminar</td>
<td>3:00 pm</td>
<td>Jeffery 319</td>
<td>Mike Roth</td>
<td>K-groups and Chern roots</td>
<td>Attached</td>
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<tr>
<td>Thursday, March 17</td>
<td>Seminar in Free Probability and Random Matrices</td>
<td>10:00 a.m.</td>
<td>Jeffery 222</td>
<td>Josué Daniel Vázquez Becerra</td>
<td>Second order freeness, Hadamard matrices, and signed permutation matrices, II</td>
<td>Attached</td>
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<td>Thursday, March 17</td>
<td>Math Club</td>
<td>5:30 p.m.</td>
<td>Jeffery 118</td>
<td>M. Ram Murty</td>
<td>Prime Numbers and Irreducible Polynomials</td>
<td>Attached</td>
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<td>Friday, March 18</td>
<td>Number Theory Seminar</td>
<td>11:00 a.m.</td>
<td>Jeffery 422</td>
<td>Francesco Cellarosi, Queen’s University</td>
<td>The dynamical construction of an automorphic function and its applications</td>
<td>Attached</td>
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<td>Friday, March 18</td>
<td>Conference Room</td>
<td>1:30 p.m.</td>
<td>Jeffery 521</td>
<td>Saber Jafarpour</td>
<td>On the role of regularity in mathematical control theory</td>
<td>Andrew Lewis</td>
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<td>Friday, March 18</td>
<td>Department Colloquium</td>
<td>2:30 p.m.</td>
<td>Jeffery 234</td>
<td>Ronghui (Lily) Xu, University of California, San Diego</td>
<td>Statistical challenges in analyzing observational data on pregnancy</td>
<td>Attached</td>
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<tr>
<td>Friday, March 25</td>
<td>Good Friday</td>
<td></td>
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<td>University offices are closed.</td>
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<tr>
<td>Wednesday, March 30</td>
<td>Conference Room</td>
<td>1:00 p.m.</td>
<td>Jeffery 521</td>
<td>Akshaa Vatwani</td>
<td>Higher Rank Sieves and Applications</td>
<td>M. Ram Murty</td>
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Items for the Info Sheet should reach Anne (burnsa@mast.queensu.ca) by noon on Monday. The Info Sheet is published every Tuesday.

**Wednesday, March 16, 3:00 p.m. Jeffery 319**

**Curves Seminar**

Speaker: Mike Roth  
Title: K-groups and Chern roots

**Abstract:** We will discuss K-groups, introduced by Grothendieck as part of his proof of the Grothendieck-Riemann-Roch theorem, and the idea of Chern roots, which leads to formulae for computing Chern classes of tensor products, symmetric products, and alternating products of bundles, as well as defining the Chern character, a homomorphism from the K-ring to the Chow ring.
Thursday, March 17, 10:00 a.m. Jeffery 222
Seminar in Free Probability and Random Matrices
Speaker: Josué Daniel Vázquez Becerra
Title: Second order freeness, Hadamard matrices, and signed permutation matrices, II

Abstract: In this talk, we first show how to calculate the joint distribution of the entries of a uniformly distributed signed permutation matrix. Then, we explore the idea of using Hadamard matrices and uniformly distributed signed permutation matrices to deliver asymptotic freeness of second order. This is a continuation from March 10.

Thursday, March 17, 5:30 p.m. Jeffery 118
Math Club
Speaker: M. Ram Murty
Title: Prime Numbers and Irreducible Polynomials

Abstract: The powerful analogy between prime numbers and irreducible polynomials has inspired the development of several branches of mathematics, ranging from number theory to algebraic geometry. In this talk, we will show how one can construct irreducible polynomials over the integers using the digits of prime numbers. If time permits, we will discuss how the analogy alluded to above widened our sphere of understanding.

Friday, March 18, 11:00 a.m. Jeffery 422
Number Theory Seminar
Speaker: Francesco Cellarosi
Title: The dynamical construction of an automorphic function and its applications

Abstract: I will present the construction of an automorphic function on the Jacobi group G (the Lie group consisting of the semidirect product of $\text{SL}(2, \mathbb{R})$ and the Heisenberg group). This function generalizes Jacobi theta function. The function is invariant under the action of a lattice in G and thus well defined in the quotient, but a priori only as a square-integrable function. We are able to show that the function is actually defined pointwise along the whole orbit of almost every point, under the geodesic flow. The construction uses dynamical ideals of renormalization, ergodicity of the geodesic flow, and equidistribution of horocycle lifts. As an application, we obtain limit distributional results (with power saving) for quadratic Weyl sums. Joint work with Jens Marklof.

Friday, March 18, 2:30 p.m. Jeffery 234
Department Colloquium
Speaker: Ronghui (Lily) Xu
Title: Statistical challenges in analyzing observational data on pregnancy

Abstract: We consider exposures during pregnancy including vaccines and medication. There are multiple outcomes, including for example spontaneous abortion, preterm delivery, birth defects, etc. Some of these outcomes are intrinsically linked. Some, like spontaneous abortion, has two aspects: yes or no, and if yes, the timing of the event. This latter case has close connection with the cure rate models in the literature, although our data are somewhat different. In addition, the data are obtained in the context of observational studies, so there are features including left truncation, partial interval censoring, etc. We describe the methods of inference we have developed so far, including nonparametric maximum likelihood with an EM algorithm, a weighted approach, and smoothing (if time permits), as well as discuss future works to be done.