<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Time</th>
<th>Place</th>
<th>Speaker</th>
<th>Title</th>
<th>Abstract</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thursday, January 8</td>
<td>CYMS Seminar</td>
<td>12:30 p.m.</td>
<td>Jeffery 422</td>
<td>Andrija Perunicic, Queen’s University</td>
<td>Singularities of quotients in weighted projective space</td>
<td>Attached</td>
</tr>
<tr>
<td>Friday, January 9</td>
<td>Number Theory Seminar</td>
<td>9:30 a.m.</td>
<td>Jeffery 422</td>
<td>Alia Hamieh, Queen’s University</td>
<td>A Note on the Rankin-Selberg convolution of Hilbert Modular Forms</td>
<td>Attached</td>
</tr>
<tr>
<td>Monday, January 12</td>
<td>Algebraic Geometry Seminar</td>
<td>4:30 p.m.</td>
<td>Jeffery 319</td>
<td>Tony Várilly-Alvarado, Rice University</td>
<td>Special cubic fourfolds and K3 surfaces: an arithmetic perspective</td>
<td>Attached</td>
</tr>
<tr>
<td>Tuesday, January 13</td>
<td>Special Colloquium</td>
<td>3:30 p.m.</td>
<td>Jeffery 234</td>
<td>Francesco Cellarosi, University of Illinois, Urbana-Champaign</td>
<td>Quadratic Weyl Sums, Automorphic Functions, and Invariance Principles</td>
<td>Attached</td>
</tr>
</tbody>
</table>

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

**Thursday, January 8, 12:30 p.m. Jeffery 422**  
**CYMS Seminar**  
*Speaker*: Andrija Perunicic  
*Title*: Singularities of quotients in weighted projective space

**Abstract**: We discuss an adaptation of previous techniques to resolving surface quotient singularities in weighted projective spaces.

**Friday, January 9, 9:30 p.m. Jeffery 422**  
**Number Theory Seminar**  
*Speaker*: Alia Hamieh  
*Title*: A Note on the Rankin-Selberg Convolution of Hilbert Modular Forms

**Abstract**: In this talk, we discuss recent results on the special values of Rankin-Selberg L-functions for Hilbert modular forms.

**Monday, January 12, 4:30 p.m. Jeffery 319**  
**Algebraic Geometry Seminar**  
*Speaker*: Tony Várilly-Alvarado  
*Title*: Special cubic fourfolds and K3 surfaces: an arithmetic perspective

**Abstract**: Cubic fourfolds containing a surface not homologous to a complete intersection often have nonspecial cohomology isomorphic to the primitive cohomology of a K3 surface "twisted" by an element of the Brauer group. This isomorphism is usually a manifestation of a geometric
correspondence, which has consequences for the distribution of rational points on K3 surfaces over number fields. We will discuss this circle of ideas, including some recent developments in joint work with McKinnie, Sawon and Tanimoto on p-torsion Brauer classes of K3 surfaces and with Tanimoto on the Kodaira dimension of the moduli space of special cubic fourfolds of fixed discriminant.

Tuesday, January 13, 3:30 p.m. Jeffery 234
Speaker: Francesco Cellarosi
Title: Quadratic Weyl Sums, Automorphic Functions, and Invariance Principles

Abstract: In 1914, Hardy and Littlewood published their celebrated approximate functional equation for quadratic Weyl sums (theta sums). Their result provides, by iterative application, a powerful tool for the asymptotic analysis of such sums. The classical Jacobi theta function, on the other hand, satisfies an exact functional equation, and extends to an automorphic function on the Jacobi group.

We construct a related, almost everywhere non-differentiable automorphic function, which approximates quadratic Weyl sums up to an error of order one, uniformly in the summation range. This not only implies the approximate functional equation, but allows us to replace Hardy and Littlewood's renormalization approach by the dynamics of a certain homogeneous flow. The great advantage of this construction is that the approximation is global, i.e., there is no need to keep track of the error terms accumulating in an iterative procedure.

Our main application is a new functional limit theorem, or invariance principle, for theta sums. The interesting observation is that the paths of the limiting process share a number of key features with Brownian motion (scale invariance, invariance under time inversion, non-differentiability), although time increments are not independent, the value distribution at each fixed time is distinctly different from a normal distribution.

Joint work with Jens Marklof.