



**De:** CRM CRM@CRM.UMontreal.CA  
**Objet:** COLLOQUE DES SCIENCES MATHÉMATIQUES DU QUÉBEC (05/05/2017, Gerard Freixas)  
**Date:** 1 mai 2017 10:09  
**À:** activites@CRM.UMontreal.CA

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COLLOQUE DES SCIENCES MATHÉMATIQUES DU QUÉBEC  
<http://www.crm.umontreal.ca/Colloques/index.html>  
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**DATE :**  
Le vendredi 5 mai 2017 / Friday, May 5, 2017

**HEURE / TIME :**  
16 h - 17 h / 4:00 p.m. - 5:00 p.m.

**CONFERENCIER(S) / SPEAKER(S) :**  
Gerard Freixas (Institut de Mathématiques de Jussieu)

**TITRE / TITLE :**  
From the geometry of numbers to Arakelov geometry

**LIEU / PLACE :**  
UQAM, Pavillon Président-Kennedy, 201, ave du Président-Kennedy, salle PK-5115

**RESUME / ABSTRACT :**  
Arakelov geometry is a modern formalism that extends in various directions the geometry of numbers founded by Minkowski in the nineteenth century. The objects of study are arithmetic varieties, namely complex varieties that can be defined by polynomial equations with integer coefficients. The theory exploits the interplay between algebraic geometry and number theory and complex analysis and differential geometry. Recently, the formalism found beautiful and important applications to the so-called Kudla programme and the Colmez conjecture. In the talk, I will first introduce elementary facts in Minkowski's geometry of numbers. This will provide a motivation for the sequel, where I will give my own view of Arakelov geometry, by focusing on toy (but non-trivial) examples of one of the central theorems in the theory, the arithmetic Riemann-Roch theorem mainly due to Bismut, Gillet and Soulé, and generalizations. I hope there will be ingredients to satisfy different tastes, for instance modular forms (arithmetic aspect), analytic torsion (analytic aspect) and Selberg zeta functions (arithmetic, analytic and dynamic aspects).

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**Responsables :**  
Olivier Collin (UQÀM)  
Henri Darmon (Université McGill)  
Dimitris Koukoulopoulos (Université de Montréal)  
Iosif Polterovich (Université de Montréal)  
David Stephens (Université McGill)  
Hugh Thomas (UQÀM)  
Yi Yang (Université McGill)  
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