IIIème Cycle Romand de Mathématiques

Journée Georges de Rham

Monday, March 23, 2009, EPF Lausanne, lecture room CM1

15.30 **Peter Sarnak** (Princeton University)

The affine linear sieve

Abstract: Classical problems concerning primes, from Dirichlet's Theorem on primes in progressions to the twin prime conjecture and their generalizations, can be formulated naturally in a more general setting of orbits of a group of affine morphisms of n-space which preserve integer points. We will explain this setup and describe the affine linear sieve that Bourgain, Gamburd and myself have developed in this context. The tools needed to make this sieve effective, range from automorphic forms to expander graphs and unexpectedly arithmetic combinatorics. We will highlight applications such as to the study of the Diophantine properties in Apollonian packings.

16.30 **Coffee break**

17.00 **Curtis McMullen** (Harvard University)

Billiards and moduli space

Abstract: In this talk we will discuss ergodic theory on the moduli space of compact Riemann surfaces, and its connections with algebraic geometry, Teichmüller theory and new billiard tables with optimal dynamics.

19.15 **Repas** au Restaurant de l'Université à Dorigny. Les personnes intéressées sont priées de s'inscrire jusqu'au 16 mars auprès de Mme Marcia Gouffon (tél. 021 693 5555 ou marcia.gouffon@epfl.ch).

Organisation: Philippe Michel, Nicolas Monod (EPFL)