MSRI–Evans Talk

Monday, 4:10–5:00pm, 60 Evans

April 24 **Emmanuel Peyre**, Université Joseph Fourier, MSRI

Counting the Uncountable Toward an Arithmetic-Motivic Dictionary

The height of a rational point P in the projective space $\mathbf{P}^N(\mathbf{Q})$ may be defined as

$$H_N(P) = \sup_{0 \leq i \leq N} |x_i|$$

where $(x_0, \ldots, x_N)$ are homogeneous coordinates for P with $x_0, \ldots, x_N$ coprime integers. This enables us to study the asymptotic distribution of rational points with bounded height on any projective variety. One naturally wishes to relate this distribution to geometrical objects. On the other hand, the analogy between number fields and function fields of curves is an old truism of arithmetic geometry. It is therefore natural to look for links between the asymptotic behaviour of points of bounded height on a variety and the geometry of the moduli space of morphisms of high degree from a curve to this variety. In this talk, I shall present various new insights this analogy gives into both theories.