

NYU
上海SHANGHAI
纽约大学NYU-ECNU
Institute of Mathematical Sciences
at NYU Shanghai

PROBABILITY SEMINAR

TOPIC: Statistics for Point Counting on Curves over Finite Fields

SPEAKER: Kenneth Ward, Assistant Professor of Mathematics, NYU Shanghai

TIME: 15:00-16:00, 9 December 2014

VENUE: Room 309, Pudong campus, 1555 Century Avenue (世纪大道1555号, 浦东校区, 309室)

ABSTRACT OF THE TALK

This talk will survey recent research on point counting for curves over finite fields. We will discuss the preliminary work of Garcia and Stichtenoth on identification of curves of a given genus and number of rational (and higher-degree) points using towers of function fields. Among curves of suitably large genus relative to the base field, Granville and Brock have shown that averages for point counts are more than those of curves of smaller genus. A few results, such as that of Bhargava, give information on asymptotic behavior of moduli spaces for “pointless” curves. Historically, much of the focus of this area of research has been on the identification of curves with many rational points, due to cryptographic applications. We will consider the advantages of a probabilistic approach to point counting and discuss some related open problems.

BIOGRAPHY

Kenneth A. Ward is Assistant Professor of Mathematics at NYU Shanghai. His research interests are number theory and arithmetic geometry, particularly point counting, exponential sums, and the structure of differentials. His recent work has appeared in International Mathematics Research Notices, Journal of Number Theory, and Archiv der Mathematik.