DR. YU-RU LIU
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Title: Fermat vs Waring:
An Introduction to Number Theory in Function Fields

Abstract: Let Z be the ring of integers, and let Fp[t] be the ring of polynomials in one variable defined over the finite field Fp of p elements. Since the characteristic of Z is 0, while that of Fp[t] is the positive prime number p, it is a striking theme in arithmetic that these two rings faithfully resemble each other. The study of the similarity and difference between Z and Fp[t] lies in the field that relates number fields to function fields. In this talk, we will investigate some Diophantine problems in the settings of Z and Fp[t], including Fermat's last theorem and Waring's problem

Bio: Dr. Liu obtained her Ph.D. from Harvard University in 2003 under the supervision of Barry Mazur. After graduating, she received an NSERC University Faculty Award and joined the Pure Mathematics Department at the University of Waterloo as an assistant professor. Since 2013, she has been a professor there. Dr. Liu's research involves applying analytic methods in number theory, such as the circle method and sieve methods, to study problems in additive combinatorics, analytic number theory and number theory in function fields. Her thesis work was recognized by the CMS G. de B. Robinson Award in 2005. Other awards she has received are the 2011 Instructor of the Year from the Mathematics Society and the 2013 Distinction in Teaching from the Faculty of Mathematics at the University of Waterloo. She has supervised over 50 undergraduate students and 27 graduate students/postdocs. Recently, Dr. Liu was appointed Director of the Women in Mathematics Committee at the University of Waterloo to continue her passion for promoting women and members of underrepresented groups in mathematics.

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1:30 PM – 2:30 PM
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