

University of Notre Dame Department of Mathematics

COLLOQUIUM

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Will give a lecture entitled:

Integration in valued fields.

On

Monday, February 21, 2011

At

4:15 PM

In

117 Hayes-Healy Hall

Abstract

I will begin by describing certain motivation in number theory for developing integration theory in valued fields that are not locally compact in any reasonable sense. These valued fields include local fields of higher dimensions, fields of formal Laurent series over arbitrary fields, and algebraically closed valued fields. For the latter two there is already a quite successful integration theory, namely that of motivic integration. I will explain what it is and why logic plays a fundamental role in its development. Then I will discuss how to apply such a theory of integration to the study of Igusa local zeta functions. This strategy may lead to new insights into Igusa's conjecture on the uniform behavior of exponential sums.