Algebra and Number Theory Seminar

Title: p-adic L-functions in higher dimensions

Speaker: Christopher Williams (Warwick)

Date: Thu 19th November 2020 at 2:00PM

Location: Online

Abstract: There are lots of theorems and conjectures relating special values of complex analytic L-functions to arithmetic data; for example, celebrated examples include the class number formula and the BSD conjecture. These conjectures predict a surprising (complex) bridge between the fields of analysis and arithmetic. However, these conjectures are extremely difficult to prove. Most recent progress has come from instead trying to build analogous p-adic bridges, constructing a p-adic version of the L-function and relating it to p-adic arithmetic data via "Iwasawa main conjectures". From the p-adic bridge, one can deduce special cases of the complex bridge; this strategy has, for example, led to the current state-of-the-art results towards the BSD conjecture.

Essential in this strategy is the construction of a p-adic L-function. In this talk I will give an introduction to p-adic L-functions, focusing first on the p-adic analogue of the Riemann zeta function (the case of GL_1), then describing what one expects in a more general setting. At the end of the talk I will state some recent results from joint work with Daniel Barrera and Mladen Dimitrov on the construction of p-adic L-functions for certain automorphic representations of GL_{2n}.

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