

# Number Theory Program Seminar: Karen Yeats

Location: SCGP 313

Title: Numbers from quantum field theory (lectures III and IV)

Abstract: Many interesting numbers including multiple zeta values and values of elliptic polylogarithms and even more exotic things appear in quantum field theory computations. This makes quantum field theory a fascinating playground for number theorists interested in these kinds of numbers and their structures, and in the other direction better understanding the number theoretic and geometric structures appearing here will let us better understand quantum field theory and gives new tools to compute values of practical interest to physicists. I will start at the beginning with concretely how to compute Feynman periods and Feynman integrals in straightforward cases. I will then survey some of what is known and what has been computed, focusing on the quantum field theory side, but also touching on related numbers in string theory. In my final lecture I will speak on graph invariants with the same symmetries as Feynman periods, what we know about them and what they tell us about these interesting numbers, including work of myself and collaborators.