

Cosmic Galois group and ϕ^4 theory

Erik Panzer

University of Oxford

Periods are integrals of rational functions over domains bounded by polynomial inequalities. Such integrals appear in many places in mathematical physics, including the Feynman integrals of perturbative quantum field theory. The theory of motives leads to a generalization of classical Galois theory for algebraic numbers, to the action of a group on the space of periods. In conclusion, the latter, 'cosmic' Galois group acts on Feynman integrals. I will present aspects of my joint work with Oliver Schnetz on the coaction conjecture, drawing on Francis Brown's Feynman motives, to illustrate