David Broadhurst
Open University, UK

Periods in quantum field theory

Single-scale Feynman diagrams yield integrals that are periods. In some cases these evaluate to multiple polylogarithms at roots of unity, which include multiple zeta values, multiple Deligne values, and alternating sums. In other cases, one finds L-series of modular forms. This talk will describe some of the more spectacular results that have been obtained empirically and indicate the limited extent to which mathematicians are able to comprehend the structures revealed by the calculational imperatives of the perturbative quantum field theory of the standard model of particle physics.