



Dr. David Broadhurst

Modular forms from Feynman integrals

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Francis Brown and Oliver Schnetz have identified an 8-loop Feynman diagram whose period is considered unlikely to be reducible to polylogarithms. The obstacle to such a reduction is a singular K3 surface, obtained from the first Symanzik polynomial. In this talk, I shall consider massive Feynman integrals, with K3 surfaces obtained from the second Symanzik polynomial. Remarkable relations have been discovered between the values of these integrals and L-functions of modular forms whose Fourier coefficients enumerate zeros of polynomials in $\mathbb{F}_q$.

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