



Dr. David Broadhurst Modular forms from Feynman integrals

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HU
Institut für Mathematik
Rudower Chaussee 25, Raum 1.114
12489 Berlin

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 .

Kontakt:

Humboldt-Universität zu Berlin . Institut für Mathematik
SFB 647 . Unter den Linden 6 . 10099 Berlin
Tel. +49 30 2093 1804 . Fax. +49 30 2093 2727
sfb647@math.hu-berlin.de

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