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Feynman Motives

By Matilde Marcolli

World Scientific Publishing Co Pte Ltd. Paperback. Book Condition: new. BRAND NEW, Feynman Motives, Matilde Marcolli, This book presents recent and ongoing research work aimed at understanding the mysterious relation between the computations of Feynman integrals in perturbative quantum field theory and the theory of motives of algebraic varieties and their periods. One of the main questions in the field is understanding when the residues of Feynman integrals in perturbative quantum field theory evaluate to periods of mixed Tate motives. The question originates from the occurrence of multiple zeta values in Feynman integrals calculations observed by Broadhurst and Kreimer. Two different approaches to the subject are described. The first, a 'bottom-up' approach, constructs explicit algebraic varieties and periods from Feynman graphs and parametric Feynman integrals. This approach, which grew out of work of Bloch-Enault-Keimer and was more recently developed in joint work of Paolo Aluffi and the author, leads to algebro-geometric and motivic versions of the Feynman rules of quantum field theory and concentrates on explicit constructions of motives and classes in the Grothendieck ring of varieties associated to Feynman integrals. While the varieties obtained in this way can be arbitrarily complicated as motives, the part of the cohomology that...



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Reviews

An extremely great ebook with lucid and perfect explanations. It is full of knowledge and wisdom Its been printed in an exceedingly straightforward way in fact it is merely right after i finished reading through this publication by which really transformed me, alter the way i believe.

-- **Spencer Fritsch**

This published publication is wonderful. Of course, it is actually engage in, still an interesting and amazing literature. It is extremely difficult to leave it before concluding, once you begin to read the book.

-- **Vickie Wolff**