

NEW PERSPECTIVES IN CONFORMAL FIELD THEORY AND GRAVITY

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Feynman Integrals from Integrability and Geometry

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A bottle neck for precision calculations in collider or gravitational wave physics is the computation of Feynman integrals. Here recent findings at higher loop orders emphasize the need for a deeper understanding of special functions. In this talk we highlight the family of conformal fishnet integrals as a rich setup for making progress on this frontier. In particular, we demonstrate the applicability of tools from Calabi-Yau geometry as well as AdS/CFT integrability. As an explicit example we report on recent progress for multi-loop Feynman integrals in two spacetime dimensions, where we elaborate on the connection between Calabi-Yau geometry and the so-called Basso-Dixon formula. While the restriction to two dimensions is convenient for analyzing these structures, we emphasize that higher dimensional integrals show similar features.

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