



EINLADUNG

im Rahmen des Teilchenphysikseminars

zum Vortrag

von

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über

„IBP Reduction with Gröbner bases“

Abstract:

In this talk we investigate how Gröbner bases theory can be used to perform integration-by-parts (IBP) reductions of loop integrals.

The first part of the talk serves as brief introduction to IBP reduction and Gröbner bases.

In the second part we discuss the main idea on the example of one-loop bubble and one-loop box integrals. We see that the IBP relations form a left ideal in a rational double-shift algebra.

The IBP reduction of loop integrals then amounts to computing normal forms of shift operators of the rational double-shift algebra with respect to a Gröbner basis of the left ideal.

Finally, in the last part we discuss an ansatz based on linear algebra to simulate the computation of normal forms.

This approach can be used for complicated problems, when obtaining the Gröbner basis is computationally too expensive.

Zeit: Dienstag, 20.06.2023, 16:15 h

Ort: Erwin-Schrödinger-Hörsaal, Boltzmannngasse 5, 5. Stock

Join Zoom Meeting - Meeting ID: 933 4269 3866 Passcode: 185096

<https://univienne.zoom.us/j/93342693866?pwd=aUpTR0VJNUhJY2Q0ajdaKzI1YWVVBQT09>

gez.: A. Hoang, M. Procura