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EINLADUNG

im Rahmen des Seminars für Mathematische Physik

zum Vortrag

von

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über

„Minimal quantum field theory“

Abstract:

Quantum field theory is the subject of a range of weighty textbooks. However, how much of these pages are really necessary? There is a growing list of results of observables for which the computed answer is very much simpler than their textbook calculation. A prime example are the Kawai-Lewellen-Tye (KLT) relations which express the self-scattering of gravitational waves in terms of a sum over products of gluon scattering amplitudes, as well as their loop level extension. Simple results beg for a simple explanation, especially in a theory as complicated and ill-understood as general relativity. Here I will show quite generally that scattering amplitudes can be computed by simply solving all physical constraints, which reduces the problem to linear algebra. Beyond inherent beauty this absolutelty minimal approach shows clearly that KLT relations are a direct and general consequence of gauge invariance, with an important exception in certain effective field theories. If I have time, I'll also show how to use this technology for cutting-edge computations in the standard model and in Einstein-Hilbert gravity.

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