

Workshop on Integrability



Contribution ID: 22

Type: 40 Min Talk

Integrability and Yangian Symmetry in 4-dimensional QFTs

Monday, 28 March 2022 12:00 (1 hour)

In this talk I provide an overview on the appearance of integrability - especially in the form of Yangian symmetry - in the context of several different quantities in four-dimensional quantum field theories. In particular, I discuss how superconformal Yangian symmetry shows up in different forms in the context of planar $N=4$ super-Yang-Mills (SYM) theory, whose spectral problem famously maps to an integrable spin-chain.

I proceed by describing how these structures leave imprints on more generic quantum field theories. Recently, it was found that Yangian symmetry survives certain double-scaling deformations of planar $N=4$ SYM theory, and shows up in certain ubiquitous classes of massless and massive Feynman integrals. I sketch how we connected these surprising symmetry structures to a - presumably integrable - massive fishnet theory and how they can be used to set up a bootstrap algorithm that allows to calculate the integrals from scratch.

Primary author: MICZAJKA, Julian (Max-Planck-Institut fuer Physik)

Presenter: MICZAJKA, Julian (Max-Planck-Institut fuer Physik)

Track Classification: Participants Talks: Abstracts of Participants Talks