Workshop on Integrability



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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.

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Track Classification: Participants Talks: Abstracts of Participants Talks