Seminar Fakulteta za fiziku

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Mjesto: *uživo* O-153, Fakultet za fiziku, Sveučilišni kampus, Radmile Matejčić 2;

na daljinu https://meet.google.com/oom-wjvu-mux

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Higher spin-like symmetries and gauge models

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Abstract

By extending the spacetime manifold with an auxiliary space of equal dimension, we are provided with a structure dubbed "master space" on which we can build field theories and realize a generalization of uplifting rigid symmetries of matter to local ones. The associative algebra of functions on the master space is realized with the non-commutative Moyal product, which enables us to formalize a Lie algebra of higher-derivative symmetries of matter and gauge fields in a consistent manner. The discovered formalism enables us to formulate gauge field theories, of which we primarily focus on the analogue of Yang-Mills, while emphasizing how the formalism furnishes a way to formulate theories in a manner covariant with respect to the mentioned symmetries.
In this seminar we will show how the Yang-Mills like theory is constructed and display its most important properties: it is classically perturbatively stable and admits a description through the L-infinity algebra. We will show two possible approaches to analyzing the particle spectrum of the theory, both novel, through which we conclude that the theory contains continuous-spin degrees of freedom. Finally, we will focus on some applications in scattering processes and an induced geometric picture found in an on-shell truncation of the gauge field.