

PHYSIKALISCHES KOLLOQUIUM

Wintersemester 2026/27

Das Kolloquium findet (soweit nicht anders angegeben) **jeweils montags um 14:15 Uhr im Röntgen-Hörsaal** des Physikalischen Instituts, Hubland Campus Süd, Universität Würzburg **und online via Zoom** statt.

Zugangsdaten siehe <https://www.physik.uni-wuerzburg.de/aktuelles/veranstaltungen-aus-der-physik/physikalisches-kolloquium/>

25.01.2027

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Asymptotically Safe Gravity: QG as a QFT

Abstract

Can quantum gravity (QG) be consistently described as a quantum field theory (QFT)? While the quantization of General Relativity leads to a *perturbatively* non-renormalizable theory, this does not necessarily rule out a quantum-field-theoretic description of gravity at high energies. In this colloquium, I will introduce Asymptotically Safe Gravity, a scenario initially proposed by Steven Weinberg, in which the high-energy behavior of gravity is controlled by an interacting fixed point of the renormalization-group flow. Such a fixed point provides an ultraviolet completion for gravity, rendering it *non-perturbatively* renormalizable. I will discuss the state of the art of the approach, its implications for particle physics, and recent developments in connecting and testing it through effective field theory. Finally, I will discuss how an effective version of asymptotic safety can be used in conjunction with other approaches to quantum gravity, including string theory, to bridge fundamental aspects of gravity with the low-energy world.

Für die Dozentinnen bzw. Dozenten der Fakultät

Prof. Dr. Trauzettel, Dr. Ünzelmann, Hr. Müller