

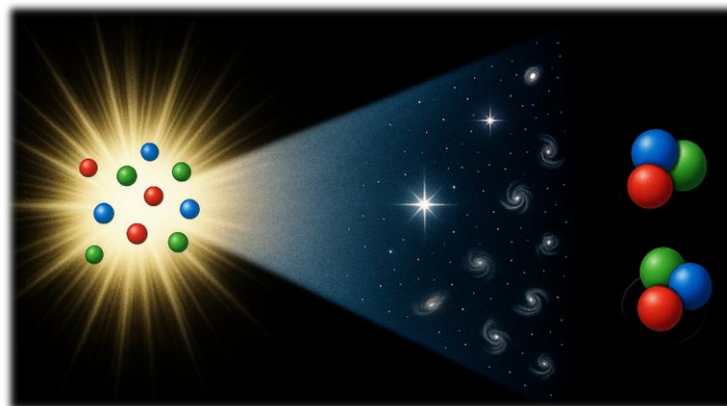
Einladung zum Physikalischen Kolloquium

19.06.2026 Kim Berghaus, Karlsruher Institut für Technologie

»The strong force could have heated the Universe's first moment«

Einführung: M.M. Mühlleitner

In this colloquium I will illustrate how the strong nuclear force of the Standard Model can generate the heat of the hot Big Bang itself. It is widely believed that cosmic inflation, the era of accelerated expansion in the infant universe, occurred while the cosmos was cold and empty, requiring some unknown process to subsequently generate the hot plasma we observe. I will show that the early universe may have instead been immersed in a hot bath of known elementary particles during inflation. The proposed mechanism couples gluons, which mediate the strong force in atomic nuclei, with an axion-like particle that drives inflation. This coupling induces friction that provides the energy to heat the inflating universe, demonstrating that the resulting "warm inflation" (a hypothesis first proposed in 1995) is viable using Standard Model particles. I will discuss the testable predictions for upcoming observations as well as implications for the strong CP problem and dark matter.



Der Vortrag findet **am Freitag, den 19. Juni 2026 um 15:45 Uhr im Otto-Lehmann-Hörsaal**, Physik-Flachbau (Geb. 30.22), KIT-Campus Süd statt.