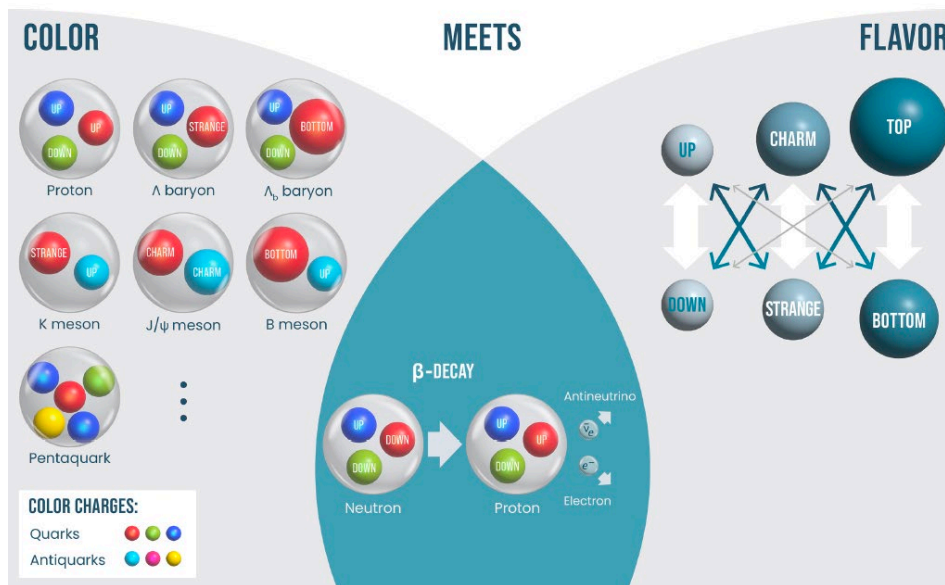


# PHYSIKALISCHES KOLLOQUIUM

AM 12. MAI 2025 UM 16 UHR C.T.  
IM GROßEN HÖRSAAL



## THE PHYSICS OF QUARKS – MATTER UNDER THE MAGNIFYING GLASS ALEXANDER LENZ UNIVERSITÄT SIEGEN

The standard model of particle physics (SM) describes very successfully the microscopic world, but it also leaves some very fundamental questions open, like: how was it possible at all, that matter could be created in the big bang? Therefore a sizeable fraction of current research activities in particle physics are concerned with finding deviations of the SM from experiment. These deviations could then shed light on the extension of the SM realised in nature. However, one of the biggest conundrums in this research program is given by the strong interaction (described by color charges) which overshadows the interesting fundamental processes (e.g. flavour transitions) that might deviate from the SM expectations. To some extent the strong interaction is very familiar: Quarks - the fundamental constituents of matter - are bound via the strong interactions, into protons and neutrons or into similar bound states like a B-mesons and protons and neutrons are bound via the strong interaction in nuclei. On the other hand the theory describing the strong interaction - Quantum Chromo Dynamics (QCD) - cannot be solved exactly, which can sometimes lead to large uncertainties. In this talk we will discuss the interesting interplay between Color and Flavor in current research in particle physics.

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