

PHYSIKALISCHES KOLLOQUIUM

Wintersemester 2023/24

Das Kolloquium findet (soweit unten nicht anders angegeben) jeweils montags **jeweils montags um 17:15 Uhr online via Zoom** statt.

(Der jeweilige Link wird noch zur Verfügung gestellt.).

18.12.2023

Prof. Dr. Claudio Kopper

FAU Erlangen-Nürnberg, Erlangen Centre for Astroparticle Physics (ECAP)

Chasing Ghosts in Extreme Environments - Astroparticle Physics with High-Energy Neutrinos

Abstract

In 2013, the IceCube Neutrino Observatory, built into the glacier at the geographical South Pole, discovered a flux of high-energy neutrinos of extra-terrestrial origin, pushing the field of neutrino-astronomy into a new era. With energies exceeding 1 PeV, it is a good assumption that these neutrinos are associated with the unknown accelerators of high-energy cosmic rays.

However, even 10 years later, the exact origin of these neutrinos remains a mystery. Following the initial discovery of a diffuse astrophysical neutrino flux a decade ago, recent searches have also identified the blazar TXS 0506+056 and the Seyfert galaxy NGC 1068 as candidate extragalactic neutrino sources. Furthermore, IceCube has recently found evidence for a neutrino flux from our own Galactic plane.

With IceCube being upgraded with a low-energy extension and new calibration instrumentation and new neutrino telescopes such as KM3NeT ARCA/ORCA in the Mediterranean Sea and P-ONE in the Pacific being constructed or planned, respectively, we are now entering an exciting era of discoveries to be made.

In this talk, I will describe the current state of our knowledge of the neutrino sky and give an overview of the extensive global multi-messenger program trying to solve the mystery of cosmic neutrinos.

Für die Dozentinnen bzw. Dozenten der Fakultät

Prof. Dr. Assaad, Prof. Dr. Hinrichsen, Prof. Dr. Pflaum und Hr. Kuhr