Carl von Ossietzky
Universität
Oldenburg
Institut für PHYSIK

Theoriekolloquium

Am **21. April 2022 um 14.15 Uhr** hält

Frau Prof. Dr. Julia Tjus (Bochum)

einen Vortrag mit dem Titel

Plasmas, Particles, and Photons - Theoretical approaches in Multimessenger Astrophysics

Modern astrophysics is explaining phenomena in the Universe by combining information from all wavelength, as in the past decades, instruments have started to cover the entire energy range from radio waves up to high-energy gamma-rays at > TeV energies. Other messengers like neutrinos and gravitational waves are now also available. This wealth of data challenges theoretical models of the astrophysical environments, as the description of all aspects of a source or phenomenon at the same time requires quantitative models, based on the fundamental physics of matter. In this talk, the focus is on how the non-thermal part of the Universe can be understood by modeling particle transport and interactions in turbulent magnetic fields. Challenges in the modeling of cosmic-ray propagation will be discussed together with recent results of how a three-dimensional modeling of the transport can effect signatures in galaxies like our own or even in active ones. I will also discuss the importance of the proper description of hadronic interactions at the highest energies and in forward direction in order to properly describe signatures of high-energy gamma-rays and neutrinos and how we can build up a consistent picture of the Universe by applying fundamental plasma and particle physics in astrophysical environments.

Interessierte sind herzlich eingeladen.

gez. Prof. Dr. Andreas Engel