



Sommersemester 2022

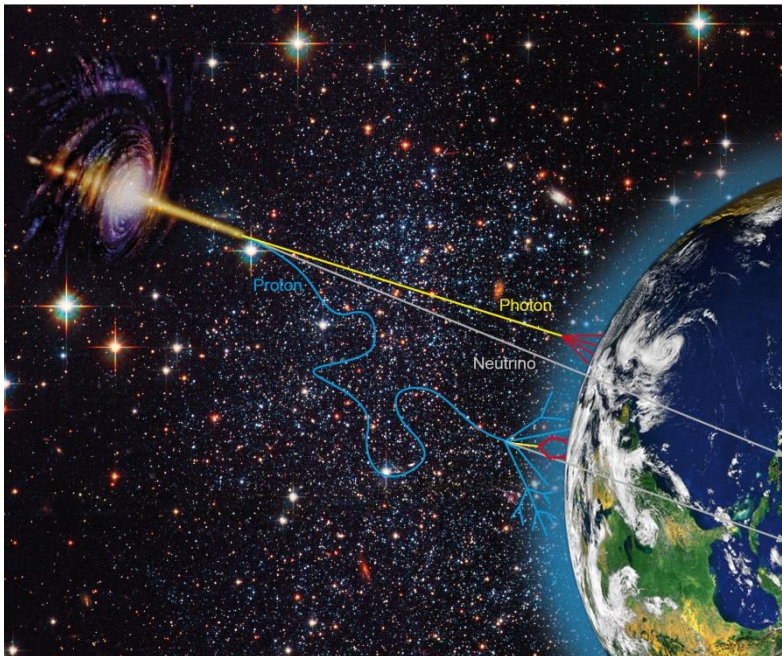
Montag, 20.06.2022, 12 Uhr c.t. im HNB und  
hybrid als [Zoom meeting](#) (Meeting-ID: 632 5520 9938, Passwort: 526977)

Antrittsvorlesung

## Ghostly particles open a new window to the universe

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Cosmic rays are charged particles (mainly protons) that bombard the Earth from all directions reaching energies up to 10 million times what can be achieved by the most powerful man-made accelerator, the LHC. Their origin is difficult to trace, because cosmic rays are deflected by magnetic fields on their journey from their source to Earth. However, cosmic rays produce gamma-ray photons and neutrinos in interactions

with matter and photon fields in or close to their source. Being neutral those secondary particles can travel undeflected and ultimately point back to the source. While gamma rays are not solely produced in interactions of cosmic ray protons, neutrinos provide a smoking-gun signature for acceleration of protons (or heavier nuclei).

A diffuse flux of cosmic neutrinos was first discovered by the cubic-kilometer-sized IceCube detector located at the South Pole in 2013. I will present the ongoing search for the origin of those neutrinos using multi-messenger studies and discuss promising candidate sources including TXS 0506+056, an active galactic nuclei with a relativistic jet of ionized matter pointing in our direction, and AT2019dsg, a supermassive black hole shredding a star.

Einführung: Prof. Dr. Ilya Eremin

Vor dem Vortrag werden Kuchen und Kaffee angeboten.

Die Fakultät lädt alle Interessierten herzlich ein.