T 79: Hauptvorträge 4

Zeit: Donnerstag 8:30–10:30 Raum: K.11.24 (HS 33)

Hauptvortrag T 79.1 Do 8:30 K.11.24 (HS 33)

Our Cosmos: news from the oldest light — •Torsten Ensslin for the Planck-Collaboration — MPI für Astrophysik, Garching, Deutschland

The oldest light in the Universe, the cosmic microwave background, carries information on all cosmic epochs, from the inflationary phase fractions of a second after the Big Bang, through the radiation, matter, and Dark Energy dominated early, intermediate, and late times of the Cosmos, until today. The Planck Mission has measured this light with unprecedented precision in intensity and polarization. This talk focuses on the cosmological and astrophysical results from the most recent analysis of the Planck data.

Hauptvortrag T 79.2 Do 9:10 K.11.24 (HS 33)

Interpretation of results on high-energetic cosmic neutrinos — •Walter Winter — DESY, Zeuthen, Germany

The discovery of high-energetic cosmic neutrinos is one of the recent major breakthroughs in science. We discuss the concept of the neutrino production, and interpret recent results taking into account the information from other messengers (gamma-rays, cosmic rays). For example, one question is if these neutrinos come from the most powerful accelerators in the universe, i.e., the ones which can accelerate cosmic rays to the highest observed energies. We also discuss future perspectives for neutrino astronomy.

Hauptvortrag T 79.3 Do 9:50 K.11.24 (HS 33)

Results and projects of the neutrino experiment Borexino — •Lothar Oberauer for the Borexino-Collaboration — TUM, Physik-Department, James-Franck-Str 1, 85748 Garching

Recently, the Borexino experiment at the Gran Sasso underground laboratory published the first spectroscopic measurement of low energy neutrinos emerging from the solar fusion reactions of two protons (Nature 512). With this result Borexino has now completed a full set of measurements for all major neutrino branches from the solar pp-fusion chains. I will discuss the results and compare them with predictions from astrophysical calculations, taking into account neutrino oscillation parameters and solar matter effects. Finally, I show the prospects of Borexino for solar CNO-neutrinos, geo-neutrinos and the search for sterile neutrinos in the context of SOX (sterile neutrino oscillation experiment). The TUM contribution to Borexino was funded by the DFG, the excellence cluster "origin and structure of the universe", and the MLL in Garching.