Westfälische Wilhelms-Universität Münster

FACHBEREICH PHYSIK

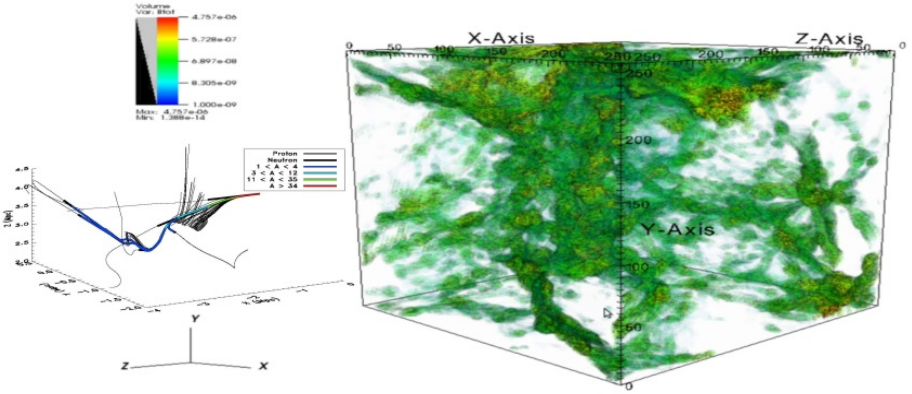
Allgemeines Physikalisches Kolloquium

Donnerstag, 20.11.2014 um 16 Uhr c.t.

Prof. Dr. Günter Sigl
Institut für Theoretische Physik
Universität Hamburg

The Enigma of the Highest Energy Particles in the Universe

Cosmic rays have been observed up to several 10^{20} eV through the showers of secondary particles they induce in the atmosphere. This is a macroscopic energy of up to 50 Joules, presumably in one elementary particle. The existence of such particles and their propagation through the highly structured universe, schematically shown in the figure, pose formidable challenges and exciting prospects at the same time: Their origin and sources have not been identified yet, but they already allow to test physics at center of mass energies unattained in the laboratory, albeit in a rather indirect way. We will give an overview over possible sources and acceleration mechanisms, open questions and future prospects, including the role of secondary gamma-rays and neutrinos produced in interactions of the charged primary cosmic rays.
Possible origins of the extraterrestrial neutrinos recently discovered by the IceCube experiment at the South pole will also briefly be discussed in this context.



IG1 HS2, Wilhelm-Klemm-Straße 10
Kolloquiums-Kaffee ab 16.00 Uhr vor dem Hörsaal
Im Anschluss an den Vortrag findet ein geselliges Beisammensein mit Getränken und Knabbereien statt.

Kolloquiumsbeauftragter: Prof. Dr. Bratschitsch
Einladender: Prof. Dr. Klasen