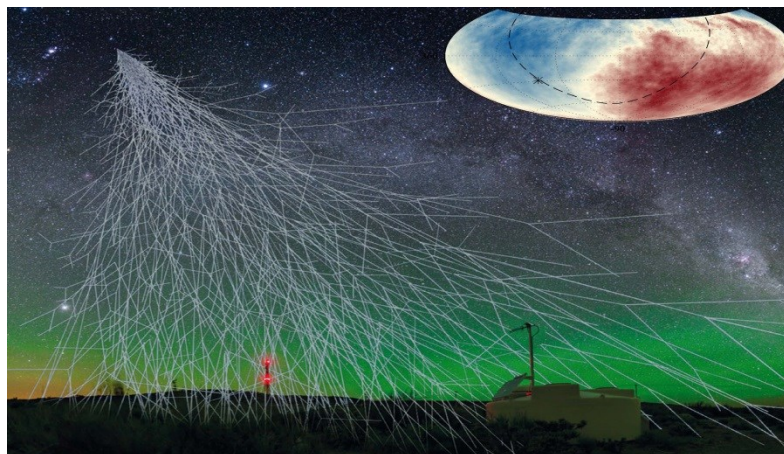


Ultra-High Energy Cosmic Rays: Exploring the Universe at the Highest Energies.

Tuesday, 20 February 2018, DESY Auditorium, 16:45 h

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The origin of Ultra-High Energy Cosmic Rays (UHECR) with energies to beyond 10^{20} eV is one of the most pressing puzzles in high energy astrophysics. The advent of large scale observatories, most prominently the Pierre Auger Observatory, have dramatically advanced our understanding of UHECR and have brought a number of surprises during the last few years. As an example, a strong suppression of the flux around 5×10^{19} eV is observed but appears to be caused primarily by the limiting energy of the sources, rather than by the GZK-effect. In consequence, the flux of cosmogenic photons and neutrinos is reduced by some orders of magnitude compared to previous estimates which is a decisive ingredient for estimating the physics potential of future neutrino and gamma-ray observatories. Despite the fact that the UHECR sky turned out to be much more isotropic than expected, significant large-scale anisotropies have recently been observed by the Pierre Auger Observatory at $E > 8$ EeV which determine the extragalactic origin of these particles. At the highest energies, the sky maps start to exhibit distinct and more complex features. While no discrete sources of UHECR have been identified so far, the noose is tightening around nearby extragalactic objects. Prospects that emerge from this new picture of UHECR will be discussed.

- **Coffee, tea and cookies will be served at 16:30h**
- **After the colloquium there is a chance for private discussions with the speaker over wine and pretzels**