

Sommerfeld Theory Colloquium

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IS ULTRA HIGH ENERGY COSMIC RAY PUZZLE SOLVED ?

The 15 years old Ultra High Energy Cosmic Ray (UHECR) puzzle consists in absence of predicted sharp steepening of the spectrum at energy $(5-7) \cdot 10^{19}$ eV, known as the 'Greisen-Zatsepin-Kuzmin (GZK) cutoff'. For explanation of this puzzle many new ideas have been put forward, from decaying superheavy dark matter to the Lorentz invariance breaking. In my talk I will demonstrate that most conservative astrophysical solution to the UHECR puzzle is plausible. This solution implies the powerful AGN as the sources, probably with jet acceleration there, transition from galactic to extragalactic cosmic rays at $E \sim 1 \cdot 10^{18}$ eV, with proton-dominated composition above this energy and with presence of the modified GZK cutoff.

Wednesday, 3 May 06, 11.15 h , Room 348 / 349, Theresienstr. 37 / III