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Sommerfeld Theory Colloquium

Prof. V. V. Flambaum

University of New South Wales, Australia

Variation of fundamental constants in space and time: theory and observations

Theories unifying gravity with other interactions suggest temporal and spatial variation of the fundamental "constants". The spatial variation can explain fine tuning of the fundamental constants which allows humans (and any life) to appear. I present a review of recent works devoted to the variation of the fine structure constant alpha, strong interaction and fundamental masses (Higgs vacuum). There are some hints for the variation in quasar absorption spectra, Big Bang nucleosynthesis, and Oklo natural nuclear reactor data. High accuracy results are obtained using atomic clocks. Huge enhancement of the variation effects happens in transitions between close atomic, molecular and nuclear energy levels. New theoretical and experimantal results on dependence of the fundamental constants on gravitational potential are also presented.

Wednesday, 18th July 07, 11.15 h, Room 348 / 349, Theresienstr. 37 / III

Prof. H. Fritzsch