



Einladung

zum

Seminar des Instituts für Quantenphysik

Prof. Dr. Alexander E. Kaplan
Johns Hopkins University, Baltimore, MD, USA

***\hbar 's sign-reversal for spin-0
particle \leftrightarrow antiparticle transformation:
anti-gravity and elimination of CPT-
invariance***

Mittwoch, den 3. Juli 2019

11:00 Uhr

O25/648

Abstract:

While revisiting Klein-Gordon relativistic quantum equation for spin-0 particles (bosons), we predict that \hbar reverses its sign for negative energies.

We formulated a universal symmetry rule, whereby all the parameters that couple particles to external fields reverse their sign along with \hbar at a particle \leftrightarrow antiparticle transformation.

This in particular implies anti-gravitation between matter and antimatter. It also brings about unexpected cosmological consequences by suggesting formation of "checkered universe" made by separated matter-



antimatter cells-subuniverses. Our results suggest that the \hbar -conjugation principle and related invariance may replace **CPT**-invariance in general relativistic quantum mechanics.

(A. E. Kaplan, *Physica Scripta* **94**, 104003, August 29, 2018)