

An introduction to the session

Low energy photon experiments, vacuum polarisation and light-by- light scattering

What is it all about ?

new ideas, projects, results ?

my personal view

Motivations

- Maxwell equations
 - quantum origin ?
 - extension for high intensity fields / experimental test
 - is QED (Euler-Heisenberg Lagrangian) the ultimate theory ?
- Vacuum breakdown in high fields
 - Critical field notion
 - highly non linear multi-photon effect (analogy with XUV production from IR fs pulsed laser) ?
- Photon / vacuum properties
 - possible consequences on cosmology (10^9 photon per proton in the universe)
 - limits on vacuum birefringence from Planck CMB survey (next year)
 - Axion-photon coupling (dark matter candidate)
 - fluctuations in photon propagation ?

Where do we stand ?

- ~ 1 to 3 orders of magnitude far from meaningful measurements ?
- a long way to go
- good perspectives

some non standard stuff

I thank the organizers
(& the speakers)