



## Rainer Grobe

(Max-Planck-Institute for Nuclear Physics, Heidelberg and Intense Laser Physics Theory Unit, Illinois State University, Normal USA)

### Visualization of quantum field theoretical processes with space-time resolution

Almost all of our knowledge of quantum field theoretical processes is based on the asymptotic and perturbative S-matrix approach, which cannot provide any spatially or temporally resolved information about the underlying physical mechanisms. In order to obtain some first insight of how an photon can be absorbed by an electron, e.g., or how two physical charges can actually attract each when their photonic dressing clouds overlap, we have solved quantum field theory on a numerical space-time grid. These computer simulations try to examine the microscopic origin of forces, which are sometimes being viewed as the result of an exchange of virtual photons.

R.E. Wagner, M.R. Ware, B.T. Shields, Q.Su, and R. Grobe, PRL 106, 023601 (2011).

13. Januar 2012, 15:30 Uhr

Universität Ulm, Raum N24/251  
Albert-Einstein-Allee 11, 89081 Ulm

