

Theo Nieuwenhuizen

[back to namelist](#)

Theo Nieuwenhuizen

Univ. of Amsterdam, NL

“Walking on quantum foundations”

The only point of contact between the quantum formalism and reality lies in measurements. Studying quantum measurement means to model the apparatus A and solve the dynamics of when it is coupled to the tested system S. It appears that measurement goes in three steps. First the off-diagonal elements decay by dephasing and decoherence, in a cascade of multiparticle correlations between S and A. The second step is the registration, where the pointer goes from its initial metastable state to one of the stable states. The third step, subensemble relaxation, is a new mechanism which acts near the end of the measurement inside A. Weak postulates are formulated to connect to individual measurements, thus narrowing the measurement problem.

If time permits I will give details on employing lensing data of a galaxy cluster to predict a neutrino mass of 1.86 eV and their Dirac nature.

[Watch presentation video](#)



[Download presentation.pdf](#) (2MB)



[Download abstract.pdf](#)

