

MP 1 Hauptvortrag Fredenhagen

Zeit: Mittwoch 11:00–12:00

Raum: HG2-HS4

Hauptvortrag

MP 1.1 Mi 11:00 HG2-HS4

Noncommutative spacetime and quantum coordinates of an event — •KLAUS FREDENHAGEN — II. Institut für Theoretische Physik, Universität Hamburg, Luruper Chaussee 149, D-22761 Hamburg, Germany

Spacetime occurs in quantum field theory in form of a parametrization of the observables of the theory, quite similar to the appearance of time in nonrelativistic quantum mechanics. The transition to a noncommutative spacetime is therefore somewhat formal and one might think of other alternatives to the usual spacetime. There is, however, also the possibility to introduce quantum observables describing the spacetime position of events, in a similar way as time of occurrence observables were introduced by Brunetti and myself in quantum mechanics. This idea is tested on two examples, one on Minkowski space and one on the noncommutative Minkowski space in the sense of Doplicher et al.. In both cases the observed spacetime arises as the image of the parameter spacetime under a completely positive map.