

Im Oberseminar

Deformationsquantisierung

spricht am **24. 10. 2014 um 14 Uhr c.t.**,

im Seminarraum 00.009 (Physik Ost)

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über das Thema:

The Spectral Presheaf as the Spectrum of a Noncommutative Operator Algebra

The spectral presheaf of a nonabelian von Neumann algebra or C^* -algebra was introduced as a generalised phase space for a quantum system in the so-called topos approach to quantum theory. Here, it will be shown that the spectral presheaf has many features of a spectrum of a noncommutative operator algebra (and that it can be defined for other classes of algebras as well). The main idea is that the spectrum of a nonabelian algebra may not be a set, but a presheaf or sheaf over the base category of abelian subalgebras. In general, the spectral presheaf has no points, i.e., no global sections. I will show that there is a contravariant functor from the category of unital C^* -algebras to a category of presheaves that contains the spectral presheaves, and that a C^* -algebra is determined up to Jordan $*$ -isomorphisms by its spectral presheaf in many cases. Moreover, time evolution of a quantum system can be described in terms of flows on the spectral presheaf, and commutators show up in a natural way. I will indicate how combining the Jordan and Lie algebra structures can lead to a full reconstruction of nonabelian C^* - or von Neumann algebra from its spectral presheaf.

gez. Stefan Waldmann