Prof. Dr. Klaus Fredenhagen
Algebraic structures in classical and quantum field theory

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Universität Potsdam
Campus Am Neuen Palais
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Quantum field theory is governed by the principles of locality and covariance. It will be discussed how these principles can be formulated in the presence of gravitational fields and how they are encoded in various algebraic structures, among them the Peierls bracket of classical field theory, the operator product and the time ordered product of quantum field theory, up to the algebraic properties of the renormalization group. The leading mathematical concept is that of a natural transformation between suitable functors.

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