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Ralf Banisch: The Unruh Effect and the General Boundary Formulation of Quantum Field Theories.

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A quantum field theory can be fully described by giving the amplitudes for all field configurations on the boundary of some spacetime region. Conventionally, one chooses a region bounded by an initial time slice and a final time slice, but with the General Boundary Formulation of Quantum Field Theories, arbitrary boundary geometries can be considered. I will review this approach and then ask whether or not the Unruh effect is reproduced within it. Since the Unruh effect is a fairly subtle Quantum Field Theory effect, this question will serve well to test the GBF approach. We will see that to answer this question, a vacuum state, or equivalently, a complex structure, must be specified. I will show a natural proposal by Ashtekar and Magnon for a complex structure and show indications that this is distinguished by the Unruh effect.