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## Oberseminar Dynamische Systeme

### When is topology change physically reasonable?

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#### Abstract:

General Relativity is famous for merging the concepts of space and time into a single entity, spacetime, represented by a 4-dimensional manifold. In practice, however, most interesting spacetime manifolds can still be equipped with a function that plays the role of time. Topology change refers to the situation when, say, the  $\{\text{time}=1\}$  set has a different topology than the  $\{\text{time}=0\}$  set. There is an ongoing debate about whether the laws of physics should allow topology change or not. This is partly because some examples are known where the change in topology leads to unphysical behaviour, such as infinite energy bursts of a quantum field propagating on spacetime. In this talk I will review previous ideas and work related to topology change and present recent progress on a conjecture of Borde and Sorkin which aims to distinguish between "good" and "bad" topology change.

Guests are very welcome!