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Causal maps in quantum field theory

Monday, 23 June 2025 17:10 (15 minutes)

In this talk, we define and characterize localized causal operations in a real scalar quantum field theory, and we will show that these operations exactly correspond to those satisfying various equivalent no-signalling conditions proposed in previous works. The simplicity of this characterization allows us to define a faithful quantifier of how much a map enables faster-than-light signalling in a given field state. Finally, we will apply our results to revisit relevant examples, providing straightforward proofs of their causal (or acausal) behaviour.

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