



Contribution ID: 201

Type: **Talk**

Causal structure, quantum memory, and relativistic particles

Thursday, 26 June 2025 13:10 (30 minutes)

Quantum non-Markovianity—the influence of an external memory on a system’s dynamics—has posed long-standing technical and conceptual challenges. Recently, significant insight was transferred from the field of quantum causal structures, highlighting the role of interventions and multi-time correlations. In this talk, I will review the causal-structure approach to non-Markovian multi-time processes and present recent results characterizing system-environment interactions that lead to a specific type of classical memory. This applies to one of the classic RQI topics: relativistic quantum particles with internal structure (or interfering “quantum clocks”). Despite their non-Markovian behaviour defying standard open-system assumptions, the classical-memory nature of their dynamics can greatly simplify their analysis

Primary author: COSTA, Fabio (Stockholm University)

Presenter: COSTA, Fabio (Stockholm University)

Session Classification: Thursday Plenary Session