



The Abdus Salam  
International Centre for Theoretical Physics



School on  
NEW TRENDS IN QUANTUM DYNAMICS AND ENTANGLEMENT  
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## NON-MARKOVIAN DYNAMICS IN OPEN QUANTUM SYSTEMS

### 2. Non-Markovian Dynamics and Memory Kernels

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#### Abstract:

We construct a class of master equations with memory kernel, for which sufficient conditions to ensure complete positivity of the dynamics can be formulated. A probabilistic interpretation of these kernels will be given, showing that they provide the quantum counterpart of classical semi-Markov processes, which describe memory effects and include Markov processes as a special case.