

Seminar

Control of Open Quantum Systems with Constrained Fields

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Optimisation problems are meaningless without constraints. An important constraint to consider is the fluence, which is the integrated squared control field. The problem of minimising fluence while maximising the overlap to a final state was considered by Krotov. The uniform convergence of this algorithm was proven by Maday and Turinici. These authors showed that with each iteration, the increase in the cost functional whose maxima is sought is positive semidefinite. In this talk, we consider the important problem of generalising this proof of uniform convergence to open quantum systems. We consider a time-local Markovian master equation and discuss a variational control algorithm for this aforementioned equation in Liouville space. We show that for a wide class of variational control algorithms, this open system control algorithm can be shown to be uniform convergent. This result implies that variational optimisation can be deployed to find optimal fields in open quantum systems evolution with the aid of efficient algorithms. Finally, we discuss applications to quantum thermodynamics.

Monday, Aug 14th 2017

04:00 PM (Tea/Coffee at 03:45 PM)

Auditorium, TIFR (FReT-B)