Some New Algorithmic Approaches for the Numerical Simulation in Quantum Control

Gabriel Turinici (`gabriel.turinici@inria.fr`)
http://www.asci.fr/Gabriel.Turinici/scientific.html
INRIA Rocquencourt
B.P. 105
78153 Le Chesnay Cedex, France

Abstract. Numerical simulations are today an important tool used to understand the mechanisms of quantum control. Starting from earlier works that used gradient descent searches and up to recently devised monotonically convergent algorithms, the landscape of numerical experiments has witnessed important advancements. In addition to a pedagogicaly oriented historical introduction, the talk will attempt to look ahead in the future by discussing new classes of monotonically convergent algorithms together with the a new scheme that allow for parallel in time resolution of the underlying evolution equations.