

A hybrid optimization method for constrained optimal control problem

Abstract

A new hybrid algorithm by integrating a nested partitions (NP) method with successive quadratic programming (SQP) is presented for global optimization of general optimal control problems involving lumped parameter system. The control parameterization technique first employed to reduce the control problem into a parameter selection problem. Then, in the global phase a vicinity of global optimizer is approximated by an appropriate NP method. Subsequently, the SQP algorithm in the local phase promotes the accuracy of final solution. The effectiveness of the hybrid NP–SQP algorithm is also illustrated by means of numerical simulations.