

UCCS MATH
COLLOQUIUM SERIES
PRESENTS
GRADUATE STUDENT
PRESENTATIONS on

Thursday

December 6th

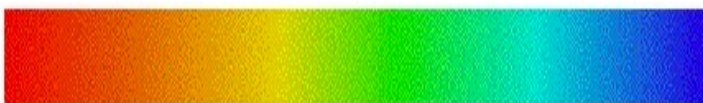
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ENG 247

Pseudospectral Methods for Optimal Control

Presented By David England

ABSTRACT: Solving an optimal control problem requires the approximation of three types of mathematical objects: the integration in the cost function, the differential equation of the control system, and the state-control constraints. An ideal approximation method should be efficient for all three approximation tasks. One such technique is the Gauss and Radau hp-adaptive pseudospectral method. It approximates the state using a basis of Lagrange polynomials and collocates the dynamics at the Legendre-Gauss-Radau points. This allows us to transform the problem to a nonlinear programming problem, which is easily solved by well known techniques. We will briefly examine the underlying theory and explore some applications.



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