

THE IV<sup>TH</sup> WORLD CONGRESS OF NONLINEAR ANALYSTS.  
WORKSHOP ON COUPLED PROBLEMS, PROCESSES, AND PHENOMENA:  
MODELING, CONTROL, AND ANALYSIS.  
FL, USA, JUNE 30 - JULY 7, 2004

## **Reduced order Control based on Approximate Inertial Manifolds**

Kazufumi Ito

North Carolina State University, USA

### **Abstract**

A reduced-order method based on approximate inertial manifolds is applied to optimal control problems in infinite dimensional state spaces. A detailed analysis of the method is given for the linear quadratic regulator problem. The method can also be applied to high-order control systems with an appropriate decomposition of the state space in terms of slow and fast exponential decay.