

1044-49-149

D J Scheeres* (scheeres@colorado.edu), 429 UCB, Boulder, CO 80309-0429, and **Chandeok Park, V Guibout** and **A Bloch**. *Optimal Control and Hamiltonian Dynamics*.

We apply classical results from Hamiltonian Dynamical Systems to the optimal control problem. We prove that the optimal cost function solution to the Hamilton-Jacobi-Bellmann equation can be decomposed into two terms: one independent of the boundary conditions and the second which explicitly depends on the boundary conditions. This result opens new approaches to solving the HJB equation via the theory of canonical transformations. One such application to the optimal control of the Underactuated Heisenberg System is detailed. (Received August 30, 2008)