# An Adaptive Algoritm for Optimal Control Inverse Problems

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In this talk I will describe in what sense optimal control problems are inverse problems (ill-posed), and in what sense they are not. A numerical method is presented. It uses the fact that minimizers of the optimal control problems also solve a Hamiltonian System. This system is discretized by the Symplectic Euler scheme. An a posteriori error representation is obtained by using both that solutions to the Symplectic Euler scheme correspond to a discrete variational problem, as well as that the value function associated with the optimal control problem satisfies a Hamilton-Jacobi-Bellman equation. This error representation can be used for adaptive algorithms. We will look at one such algorithm and how it performs on some test examples.

This is joint work with Jesper Karlsson, Stig Larsson, Anders Szepessy, and Raul Tempone.