

TITLE: Mechanics and control

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ABSTRACT:

In this talk we introduce a class of fully actuated control systems, called Clebsch Optimal Control systems. While not that interesting from the point of view of control theory, they are able to give completely new formulations of geometric and mechanical problems. In addition, they can also be turned into under actuated control problems. Interesting examples include normal metric systems on arbitrary compact Lie group orbits, the symmetric formulation of the n -dimensional Euler top, singular solutions of certain evolutionary PDEs, double bracket systems, and, of course, the Clebsch variables in hydrodynamics, the origin of the name for these control problems.