LAGRANGIAN SYSTEMS CONTROLLED BY ACTIVE CONSTRAINTS

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The talk will survey various results on the control of mechanical systems, by means of time-dependent, frictionless constraints. The basic mathematical description involves a Riemann manifold, together with a foliation describing the constraints. The equations of motion usually have an impulsive character, containing the time derivative of the control function. Their analytical form is closely linked to the geometric structure of the foliation. This same framework can also be used to study swim-like motion of one or more deformable bodies in a perfect fluid.

Major contributions to this theory were provided by researchers from the University of Padova.

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