HYBRID ROUTH REDUCTION FOR TIME-DEPENDENT LAGRANGIAN SYSTEMS

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In this talk, we discusses Routh reduction for hybrid time-dependent mechanical systems with a cyclic coordinate. We give general conditions on whether it is possible to reduce by symmetries a hybrid time-dependent Lagrangian system extending and unifying previous results for continuous-time systems. In particular, we will study the case of Lagrangian hybrid systems where the switching surface involves time and we will construct a Routh funtion associated with this problem. Finally, we illustrate the applicability of the method using the example of a billiard with moving walls. This is a joint work with Leonardo Colombo (ICMAT-CSIC) and Eduardo García-Toraño Andrés (UNS-CONICET) [1].

References

[1] Colombo, Leonardo J.; Eyrea Irazu, María Emma; García-Toraño Andrés, Eduardo. A note on Hybrid Routh reduction for time-dependent Lagrangian systems. Journal of Geometric Mechanics, 2020, vol. 12, no 2, p. 309.

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