

1038-37-15

Willy Sarlet* (willy.sarlet@ugent.be), Department of Math. Physics and Astronomy, Ghent University, Krijgslaan 281, B-9000 Ghent, Belgium. *Non-conservative mechanical systems of cofactor type.*

Cofactor-type systems were introduced by Lundmark and Wojciechowski as a specific kind of non-conservative Newtonian systems which possess a first integral quadratic in the velocities. An interesting special case concerns systems which have a double cofactor-type representation. Driven cofactor systems have the additional property that a number of the equations (the ‘driving system’) decouple from the rest and the remaining equations (the ‘driven system’), which become time-dependent along solutions of the driving system, are assumed in that sense to have forces derivable from a time-dependent potential. We discuss the geometry of partially decoupling second-order equations in general and then explain the geometric structures underlying driven cofactor systems. In doing so, we generalize the earlier work from Newtonian systems on a Euclidean space to systems on an arbitrary Riemannian manifold. (Received December 11, 2007)