Nonlinear splittings on fibre bundles

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Abstract

We introduce the notion of a nonlinear splitting on a fibre bundle as a generalization of an Ehresmann connection. We present its basic properties and we pay attention to the special cases of affine, homogeneous and principal nonlinear splittings. We explain where nonlinear splittings appear in the context of Lagrangian systems and Finsler geometry and we show their relation to Routh symmetry reduction and submersive second-order differential equations. This is a joint work with Tom Mestdag.