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The Group Structure for Jet Bundles over Lie Groups

The jet bundle $J^k G$ of k -jets of curves in a Lie group G has a natural Lie group structure. We present an explicit formula for the group multiplication in the right trivialization and for the group 2-cocycle describing the abelian Lie group extension $\mathfrak{g} \rightarrow J^k G \rightarrow J^{k-1} G$.

Keywords: Jet bundle, group cocycle, ordered partition, Leibniz algebra, near-ring.

MSC: 58A20, 20K35, 05A18