

Rapport etter endt StudForsk-prosjekt:

Project: Manifolds of mappings and the group of bisections of a Lie groupoid

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The aim of this project was to develop topologies on the space $C^\infty(M, N)$ of smooth functions from a non-compact manifold M to a possibly infinite-dimensional manifold N . This construction generalises several well known constructions (in the literature it is assumed that M and N are finite-dimensional!). Then properties of the topology on $C^\infty(M, N)$ were studied. In particular, we have investigated the continuity of several canonical composition mappings. Recall that for N finite-dimensional there are two possibilities to define the topology: either using a local charts approach or using jet bundles. It is a folklore fact that both definitions coincide. Since we were unable to track down a proof in the literature a proof of this fact is provided in an appendix. As an application of these results we prove that the group of bisections of a Lie groupoid (over a finite-dimensional base) is a topological group with respect to the topologies constructed.

The results can be found in <http://arxiv.org/abs/1603.09127>.