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General Erhesmann connections and torsor bundles

In a tangent category [1,2] it is normal to define a connection on a differential bundle [3], however, there is a more general notion – originally explored in the classical case by Erhesmann – which works on an arbitrary bundle (that is an arbitrary map from E to M). The purpose of this talk is to explore this more general notion and, in particular, to explore the theory of principal G-bundles expressed in a novel way using torsors. Of particular interest is when the torsor structure and the connection are "compatible": this allows a re-expression of the data.

References:

[1] J. Rosický, Abstract tangent functors, *Diagrammes* 12 (1984) Exp. No. 3.

[2] J.R.B. Cockett and G.S.H. Cruttwell, Differential Structure, Tangent Structure and SDG, *Applied Categorical Structures* 22 (2014) 331–417.

[3] J.R.B. Cockett and G.S.H. Cruttwell, Differential bundles and fibrations for tangent categories, *Cahiers de topologie et geometrie differentielle categoriques* (2017), to be published, `https://arxiv.org/abs/1606.08379`.

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