On nonabelian differential cohomology

Higher structures with connection have been conceived in low dimensionality and/or in sufficiently abelian cases as gerbes with connection or as differential characters. We give a general definition in terms of descent for parallel n-volume transport with values in arbitrary structure n-groups. Concrete realizations are obtained through L-infinity algebra connections and their integration. Examples include Chern-Simons connections and the String-like connections whose existence is obstructed by them.

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