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Fibrations as presentations of actions on stacks

Given a Lie group G and a stack $\mathcal{X}$ over the site of smooth manifolds, *an action of G on $\mathcal{X}$* is a map of stacks $a : G \times \mathcal{X} \to \mathcal{X}$ for which the standard action axiom diagrams are required only to commute up to 2-isomorphism. One may define the action of a Lie groupoid G on $\mathcal{X}$ similarly as a weakened version of a standard groupoid action.

In this talk, I will explain how if $\mathcal{X}$ is a differentiable stack presented by some Lie groupoid H, the data of an action of G on $\mathcal{X}$ can be repackaged as a Lie groupoid fibration $\pi : A \to G$ with kernel groupoid H. As fibrations are relatively common in the study of Lie groupoids, I will (time permitting) be able to give plenty of examples of the transition between Lie groupoid fibrations and stack actions, including examples related to gerbes, VB-groupoids, and flows of vector fields on stacks.