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Locally $G \curvearrowright X$ -manifolds

Definition. Locally $G \curvearrowright X$ -manifolds

Let G is a group action on a smooth manifold by diffeomorphisms

$$G \curvearrowright X$$

Then a manifold M is said to be **locally $G \curvearrowright X$** if

- **locally diffeomorphic to open sets of X** : there is a open cover $\{U_\alpha\}$ of M and a family of diffeomorphisms

$$\{\phi_\alpha : U_\alpha \subseteq M \rightarrow V_\alpha \subseteq X\}$$

onto open sets $V_\alpha \subseteq X$

- and when $U_\alpha \cap U_\beta \neq \emptyset$ there is a $g \in G$ such that

$$g \Big|_{V_\alpha \cap V_\beta} = \phi_\alpha \circ \phi_\beta^{-1}$$

that is, the **transition map is given by a restriction of an element of G** .

[1]

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