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Symplectic Lie group action on a symplectic manifold

Definition. Symplectic Lie group action on a symplectic manifold

A smooth Lie group action

$$\Phi : G \curvearrowright M$$

on a symplectic manifold is a **symplectic action** if G acts by symplectomorphisms

$$\Phi : G \to \mathrm{Sym}(M, \omega)$$

- For $\dim M = 2$, a symplectic Lie group action is an *area preserving* Lie group action.

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  - manifolds
    - $\mathbb{R}$-manifold symplectic
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And it has 8 siblings.

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