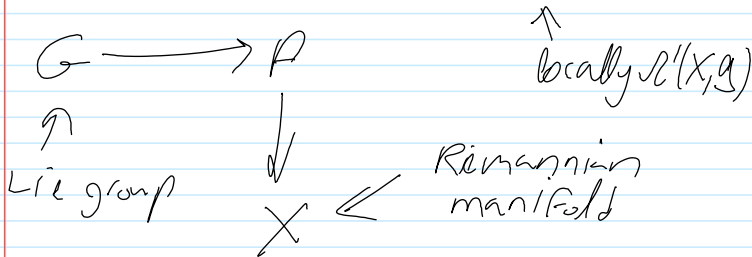


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Gauge Theories

connections $\nabla = d + A$ on



$\dim X \in \{2, 4\}$

\mathcal{A} = space of all connections

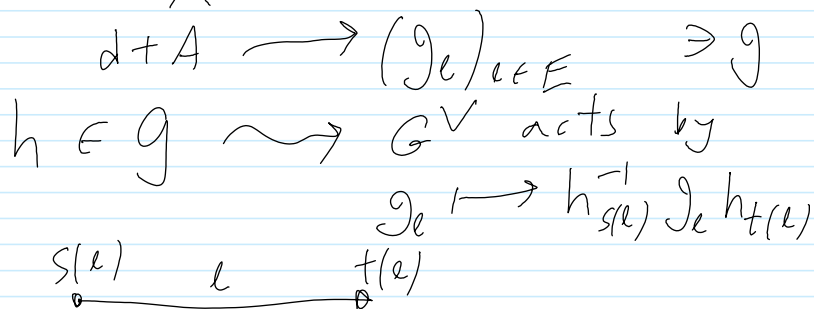
g : gauge transformations, roughly $\text{Maps}(X, G)$

acts by $A \rightarrow g^{-1}Ag + g^{-1}dg$

\mathcal{A}/g still ∞ -dimensional

measures on \mathcal{A}/g :

Approximation: $X \rightsquigarrow$ CW-complex



$\rightsquigarrow S_{YM} = \frac{1}{4g^2} \int \text{Tr} (F_{\nabla} \wedge * F_{\nabla})$

minimas are flat X connections.

$w = \int_X \text{Tr} (\theta A \wedge dA)$

Integrable systems