

Asociované vekt. bundly

$\mathfrak{g}M$ bundl Lieovy alg

AM vekt. bundl SO -bundl

$t_{\kappa}^A_B$ gen repr

$$m \in \mathfrak{g} \rightarrow M^A_B = t_{m^{\kappa}}^A = m^{\kappa} t_{\kappa}^A_B$$

$$t_{[m, n]} = [t_m, t_n]$$

$$C_{\mu\nu}^{\kappa} t_{\kappa}^A_B = t_{\mu}^A_{\nu} t_{\kappa}^{\nu} - t_{\nu}^A_{\mu} t_{\kappa}^{\mu} - t_{\kappa}^A_B$$

$$(T_m \phi, T_m \psi) = (\phi, \psi) \quad H_{AB}$$

$$t_m^T = -t_m$$

$$t_{\kappa AB} + t_{\kappa BA} = 0$$

rozšíření kov. der
 $\mathbb{R} \mathfrak{g}M$ na AM

$$\mathcal{D} \text{ na } \mathfrak{g}M \quad \mathcal{D}c = 0$$

$$\mathcal{D} \text{ na } AM \quad \mathcal{D}H = 0$$

$$\mathcal{D}_{\underline{m}} t_{\kappa}^A_B = 0$$

trivializace

$$e_{\alpha} \quad C_{\alpha\beta}^{\kappa} = \text{konst} \quad \partial c = 0$$

$$E_A \quad H_{AB} = \text{konst} \quad \partial H = 0$$

$$t_{\mu}^A_B = \text{konst} \quad \partial t = 0$$

$$\partial e_{\alpha} = 0, \partial E_A = 0$$

$$\mathcal{D}_{\underline{m}} m^{\kappa} = \partial_{\underline{m}} m^{\kappa} + [A_{\underline{m}}, m]^{\kappa} \quad A_{\underline{m}}^{\kappa} = \mathcal{R}_{\underline{m}}^{\kappa} C_{\alpha\beta}^{\kappa}$$

$$\mathcal{D}_{\underline{m}} \phi^A = \partial_{\underline{m}} \phi^A + A_{\underline{m}}^A_B \phi^B$$

$$\underbrace{\mathcal{D}_{\underline{m}} t_{\kappa}^A_B}_0 = \underbrace{\partial_{\underline{m}} t_{\kappa}^A_B}_0 - \mathcal{R}_{\underline{m}}^{\lambda} C_{\lambda\kappa}^{\nu} t_{\nu}^A_B + [A_{\underline{m}}, t_{\kappa}]^A_B$$

$$-\mathcal{R}_{\underline{m}}^{\lambda} [t_{\lambda}, t_{\kappa}]^A_B + [A_{\underline{m}}, t_{\kappa}]^A_B = 0$$

$$[A_{\underline{m}} - \mathcal{R}_{\underline{m}}^{\lambda} t_{\lambda}, t_{\kappa}]^A_B = 0$$

$$A_{\underline{m}}^A_B - \mathcal{R}_{\underline{m}}^{\lambda} t_{\lambda}^A_B = \sum_{\alpha} a_{\alpha} P_{\alpha}^A_B$$

$$A^T = -A \quad t_m^T = -t_m \quad P_{\alpha}^T = P_{\alpha}$$

$$\Rightarrow a_{\lambda} = 0 \quad A_{\underline{m}}^A_B = \mathcal{R}_{\underline{m}}^{\lambda} t_{\lambda}^A_B$$

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$t_{\underline{k}}^{\underline{A}}_{\underline{B}}$ gen repr.

$$m \in \mathfrak{g} \rightarrow M_{\underline{B}}^{\underline{A}} = t_{m \underline{E}}^{\underline{A}} = m^{\underline{k}} t_{\underline{E}}^{\underline{A}}_{\underline{B}}$$

$$t_{[m, n]} = [t_m, t_n]$$

$$C_{\underline{M}\underline{N}}^{\underline{K}} t_{\underline{K}}^{\underline{A}}_{\underline{B}} = t_{\underline{K}}^{\underline{A}}_{\underline{C}} t_{\underline{N}}^{\underline{C}}_{\underline{B}} - t_{\underline{N}}^{\underline{A}}_{\underline{C}} t_{\underline{M}}^{\underline{C}}_{\underline{B}}$$

$$(T_m \phi, T_m \psi) = (\phi, \psi) \quad H_{\underline{AB}}$$

$$t_m^T = -t_m$$

$$t_{\underline{K}}^{\underline{A}}_{\underline{B}} + t_{\underline{K}}^{\underline{B}}_{\underline{A}} = 0$$

ποσitivity με τον det

$\mathbb{R} \text{ gm ma AM}$

$D \text{ ma gm } D_c = 0$

$D \text{ ma AM } DH = 0$

$$D_m t_{ik}^D = 0$$

trivialize

e_α

E_A

$C_{\alpha\beta} = \text{konst}$

$H_{AB} = \text{konst}$

$t_{\mu B}^A = \text{konst}$

$$\partial c = 0$$

$$\partial H = 0$$

$$\partial t = 0$$

$$\partial e_\alpha = 0 \quad \partial E_A = 0$$

$$D_{\underline{m}} m^{\underline{k}} = \partial_{\underline{m}} m^{\underline{k}} + [\mathcal{R}_{\underline{m}}, m]^{\underline{k}} \quad A_{\underline{m} \underline{f}}^{\underline{a}} = \mathcal{R}_{\underline{m}}^{\underline{k}} C_{\underline{f}}^{\underline{a}}$$

$$D_{\underline{B}} \phi^{\underline{A}} = \partial_{\underline{m}} \phi^{\underline{A}} + A_{\underline{m} \underline{B}}^{\underline{A}} \phi^{\underline{B}}$$

$$\underbrace{D_{\underline{B}} t_{\underline{k}}^{\underline{A}}}_{0} = \underbrace{\partial_{\underline{m}} t_{\underline{k}}^{\underline{A}}}_{0} - \mathcal{R}_{\underline{m}}^{\underline{\lambda}} C_{\underline{\lambda} \underline{k}}^{\underline{\nu}} t_{\underline{\nu}}^{\underline{A}} + [A_{\underline{m}}, t_{\underline{k}}]_{\underline{B}}^{\underline{A}}$$

$$-\mathcal{R}_{\underline{B}}^{\underline{\lambda}} [t_{\underline{\lambda}}, t_{\underline{k}}]_{\underline{B}}^{\underline{A}} + [A_{\underline{m}}, t_{\underline{k}}]_{\underline{B}}^{\underline{A}} = 0$$

$$[A_{\underline{m}} - \mathcal{R}_{\underline{m}}^{\underline{\lambda}} t_{\underline{\lambda}}, t_{\underline{k}}]_{\underline{B}}^{\underline{A}} = 0$$

$$A_{\underline{m} \underline{B}}^{\underline{A}} - \mathcal{R}_{\underline{m}}^{\underline{\lambda}} t_{\underline{\lambda} \underline{B}}^{\underline{A}} = \sum_{\underline{\lambda}} \alpha_{\underline{\lambda}} P_{\underline{\lambda} \underline{B}}^{\underline{A}}$$

$$A^T = -A \quad t_{\underline{m}}^{\dagger} = -t_{\underline{m}} \quad P_{\underline{\lambda}}^T = P_{\underline{\lambda}}$$

$$\Rightarrow \alpha_{\underline{\lambda}} = 0 \quad A_{\underline{m} \underline{B}}^{\underline{A}} = \mathcal{R}_{\underline{m}}^{\underline{\lambda}} t_{\underline{\lambda} \underline{B}}^{\underline{A}}$$