Soni

Minasian - Topics in string geometry.

Generalized geometry

→ geom. of generalized structures

- ex on $TM \oplus \Lambda^0 T^\vee M$,

$$[v,w]_{Lie} \mapsto [v+f, w+g] = [v,w]_{Lie} + \mathcal{L}_v g - \mathcal{L}_w f \underbrace{+ i_{v_H} i_{w_H} F}_{\text{twisting}}$$

- extension of structure groups

- generalized cpx structure (GCG)

→ GCG $J: T \oplus T^\vee \to T \oplus T^\vee$, $J^2 = -1$, $J^T I J = I$

→ integrable if $\Pi_+ [\pi_-(v), \pi_-(w)] = 0$

$\mapsto \Pi_+ [\Pi_-(X), \Pi_-(Y)]_C = 0$ with

Courant bracket

$$[v+\xi, w+\eta]_C = [v,w]_{Lie} + \{L_v \eta - L_w \xi - \tfrac{1}{2} d(i_v \eta - i_w \xi)\}$$

→ we use d because

1) differential op.

ii) square 0

- closed B-transform $(v_i, \xi_i) \mapsto e^B(v_i, \xi_i) = (v_i, \xi_i + i_{v_i} B)$ is an automorphism of Courant bracket

- Courant does not give a unique generalised Riemann tensor (but Levi-Civita connection, yes) but $\hat{R}_{ab} = R_{ab} - \frac{1}{4} H_{a\,cd} H_b{}^{cd} + 2 \nabla_a \nabla_b \varphi + \frac{1}{2} e^{2\varphi} \nabla^c (e^{-2\varphi} H_{cab})$ and $\hat{R} = R + 4 \nabla^2 \varphi - 4 (\partial \varphi)^2 - \frac{1}{12} H^2$ are determined.