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Metric polynomial structures on generalized geometry

By FERNANDO ETAYO (Santander), PABLO GÓMEZ-NICOLÁS (Santander) and RAFAEL SANTAMARÍA (León)

Abstract. In this document, we study the interaction between different geometric structures defined on the generalized tangent bundle $\mathbb{T}M := TM \oplus T^*M \to M$. Specifically, we study various generalized polynomial α-structures $\mathcal{J}$ with respect to different metrics $\mathcal{G}$ on $\mathbb{T}M$ when $\mathcal{J}^2 = \alpha\mathcal{I}d$, $\mathcal{G}(\mathcal{J}\cdot, \mathcal{J}\cdot) = \varepsilon\mathcal{G}(\cdot,\cdot)$, for $\alpha, \varepsilon \in \{+1, -1\}$. Besides, we study the commutation or anti-commutation of generalized polynomial structures, showing that a generalized Kähler structure can be understood as a pair of commuting generalized almost complex structures.

FERNANDO ETAYO

AND

PABLO GÓMEZ-NICOLÁS

DEPARTAMENTO DE MATEMÁTICAS,
ESTADÍSTICA Y COMPUTACIÓN
FACULTAD DE CIENCIAS
UNIVERSIDAD DE CANTABRIA
AVDA. DE LOS CASTROS, S/N
39071 SANTANDER
SPAIN

RAFAEL SANTAMARÍA
DEPARTAMENTO DE MATEMÁTICAS
ESCUELA DE INGENIERÍAS INDUSTRIAL,
INFORMÁTICA Y AEROESPACIAL
UNIVERSIDAD DE LEÓN
CAMPUS DE VEGAZANA
24071 LEÓN
SPAIN

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