

Ferreira, C.; Machado, A.

Some embeddings of the space of partially complex structures. (English) Zbl 0951.53040
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Authors' abstract: "Let E be an n -dimensional Euclidean vector space. A partially complex structure of dimension k in E is a couple (F, J) , where $F \subset E$ is a real vector subspace, of dimension $2k$, and $J : F \rightarrow F$ is a complex structure on F , compatible with the induced inner product. The space of all such structures can be identified with the holomorphic homogeneous non-symmetric space $O(n)/(U(k) \times O(n-2k))$. We study a family of $(\mathcal{G}_{kt}(E))_{t \in [0, \pi[}$ of equivariant models of this homogeneous space inside the orthogonal group $O(E)$, from the viewpoint of its extrinsic geometry. The metrics induced by the biinvariant metric of $O(E)$ correspond to an interval of the one-parameter family of invariant compatible metrics of this homogeneous space, including the Kähler and the naturally reductive ones. The manifolds $\mathcal{G}_{kt}(E)$ are $(2, 0)$ -geodesic inside $O(E)$; some of them are minimal inside $O(E)$ and others are minimal inside a suitable sphere. We show also that the model $\mathcal{F}_k(E)$ inside the Lie algebra $\mathfrak{o}(E)$, corresponding to the compatible f -structures of Yano, is $(2, 0)$ -geodesic and minimal inside a sphere".

MSC:

[53C40](#) Global submanifolds

[53C15](#) General geometric structures on manifolds (almost complex, almost product structures, etc.)

[53C30](#) Differential geometry of homogeneous manifolds

[53C55](#) Global differential geometry of Hermitian and Kählerian manifolds

Cited in **2** Documents

Keywords:

[minimal submanifold](#); [partially complex structure](#); [homogeneous space](#); [f-structures of Yano](#)

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