Ketsetzis, Georgios; Salamon, Simon
Complex structures on the Iwasawa manifold. (English) Zbl 1059.22012

The authors study some families of (almost) complex structures on the Iwasawa manifold $M$. This manifold is obtained from the complex 3-dimensional Heisenberg group $G$ by factorization with a lattice $\Gamma$ defined by taking the components of the elements from $G$ to be Gaussian integers and acting on $G$ by left multiplication. An invariant complex structure on $M$ is induced from a left invariant complex structure on the real Lie group underlying $G$. The set of such structures compatible with a standard metric $g$ and orientation is the union of the standard bi-invariant complex structure $J_0$ and a 2-sphere of abelian complex structures defined naturally on $G$. The authors show that this description remains valid at the level of homotopy when one no longer insists on the compatibility with $g$. This requires a new approach in which complex structures are described by a basis of $(1,0)$-forms in echelon forms.

Reviewer: Vasile Oproiu (Iaşi)

MSC:
22E40 Discrete subgroups of Lie groups
53C15 General geometric structures on manifolds (almost complex, almost product structures, etc.)
57R55 Differentiable structures in differential topology
57T20 Homotopy groups of topological groups and homogeneous spaces

Keywords:
Iwasawa manifolds; almost complex structures; deformation of complex structures

Full Text: DOI arXiv EuDML

References:

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