

SUBCOMPLEX AND SUBKÄHLER STRUCTURES

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A subcomplex structure is a generalization of the almost complex structure associated with a symplectic form on any manifold of arbitrary (even or odd) dimension. A subcomplex structure on manifold M is a triple (Ω, D, Φ) , where Ω is a degenerated exterior 2-form with radical R , D is a some fixed distribution of tangent subspaces transversal to radical R , and Φ is an tangent spaces endomorphisms field so that $\Phi|_R = 0$, $\Phi^2|_D = -id$, $\Phi^*\Omega|_D = \Omega|_D$. The distribution D always has even dimension for any dimension of manifold M . When Ω is fundamental 2-form for some Riemannian Metric g associated by Φ , a quadruple (Ω, D, Φ, g) is a Subtwistor Structure on M . When D is the totally nonholonomic distribution, a subtwistor structure induces a subriemannian structure on M . When D is the holonomic distribution and Ω is a closed 2-form, a subtwistor structure induces a Kähler structure on some submanifold $Q \subset M : D|_Q = TQ$. In this case, a subtwistor structure (Ω, D, Φ, g) is called a Subkähler structure on M . We provide some results and examples for subtwistor and subkähler structures. In particular, the examples of manifolds that admit or does not admit these structures.

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