

In an attempt to unify the underlying geometry of Hamilton's equations with the language of complex geometry, we motivate the research of generalized complex geometry. We construct the structure of a Courant algebroid on the direct sum of the tangent and cotangent bundle $TM \oplus T^*M$ as we research the Courant bracket. The key notion of an involutive fibre-wise isotropic subbundle, a Dirac structure, is introduced and serves to specify a generalized complex structure. Generalized complex submanifolds are mentioned as well as the process of Dirac reduction. Generalized complex geometry and the natural mechanisms in the Courant algebroid setting are then utilised as an interpretational tool in mathematical physics and related areas. We study a reduction of the symplectic structure of a harmonic oscillator, reflect on the nature of the Dirac bracket in string theory and relate a solution of a PDE to a generalized complex submanifold through the Monge-Ampère equations.