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Dirac structures in generalized Kähler geometry

Abstract: Generalized Kähler (GK) structures were discovered by Gates, Hull, and Roček in 1984 during their study of $N=(2,2)$ supersymmetric nonlinear sigma models and later on put into the framework of generalized complex geometry by Gualtieri in his 2003 thesis. In this talk, We will first review the construction of holomorphic Dirac structures in GK geometry and explain how they can be used to study the real and holomorphic Poisson structures occurring in a GK manifold. We will use tools from the theory of Lie groupoids, and see how symplectic groupoids, presymplectic groupoids and Poisson groupoids enter naturally in GK geometry and what they will imply for the underlying GK structure. Based on joint work Marco Gualtieri.