

Second International Conference “Mathematics Days in Sofia”  
July 10–14, 2017, Sofia, Bulgaria

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## The Generalized Kähler Geometry of Holomorphic Symplectic Manifolds

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I will discuss a Calabi–Yau type conjecture in generalized Kähler geometry, focusing on the case of non-degenerate Poisson structure. I will show how it arises from a formal GIT framework in which the Kempf–Ness functional has as critical points the hyper-Kähler metrics, thus conjecturing that any generalized Kähler structure on a simple hyper-Kähler manifold is obtained by a construction due to D. Joyce. I will then indicate the naturality of the generalized Kähler–Ricci flow introduced by Streets and Tian in this GIT setting, showing that it evolves within a given complexified orbit, and that the Kempf–Ness functional is monotone, so that the only possible fixed points for the flow are the hyper-Kähler metrics. On a compact hyper-Kähler manifold, we establish global existence and weak convergence of the flow to a closed positive current. This is joint work with Jeff Streets.