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Abstract

Title: Old and new trends in bihermitian geometry.

Abstract: A bihermitian structure is a Riemannian metric compatible with two distinct orthogonal complex structures. In the mathematical literature this notion appeared in 90's in the study of the curvature of conformal 4-manifolds. However, bihermitian metrics were already introduced and studied in the physics literature in the 80's, as a building bloc of what Gates, Hull and Rocek call 'the target space for a (2,2) super-symmetric sigma model'.

There has been a great deal of interest in bihermitian geometry more recently, motivated by its link with the notion of generalized Kaehler geometry, introduced by Gualtieri and Hitchin.

In this talk I will survey the main features of 4-dimensional bihermitian manifolds, as developed in the 90's, and report on some recent existence and classification results obtained in collaborations between M. Gualtieri, G. Dloussky and the speaker.