Self-duality in higher dimensions

Ayse Humeyra Bilge

Kadir Has University
Kadir Has Street, Cibali Fatih
Istanbul, Turkey

Joint work with: T. Dereli, S. Kocak

Let ω be a 2-form on a $2n$ dimensional manifold. We call ω "strong self-dual", if the eigenvalues of its matrix with respect to an orthonormal frame are equal in absolute value. In a series of papers [1], we have shown that the notion of strong self-duality agrees with previous definitions [2]; in particular, if ω is strong self-dual, then $\omega^n = k * \omega$ and in $4n$ dimensions, ω^n is Hodge self-dual. The most interesting structures arise in eight dimensional manifolds, where among others, a local expression of the Bonan 4-form [3] is given as the sum of the squares of any orthonormal basis of a maximal linear subspace of strong self-dual 2-forms. This is joint work with Tekin Dereli and Sahin Kocak.

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