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Justin Sawon* (sawon@math.colostate.edu), Department of Mathematics, Colorado State University, Fort Collins, CO 80523-1874. *Topological bounds for hyperkähler manifolds*. Preliminary report.

The aim of this talk is to describe some formulae involving Betti numbers and characteristic numbers of compact hyperkähler manifolds. This work is inspired by a paper of Guan; he proved that all Betti numbers and characteristic numbers are bounded in real dimension eight.

Recall that the second integral cohomology of a compact hyperkähler manifold admits a quadratic form, the Beauville-Bogomolov form. Huybrechts proved that for a fixed isomorphism type of this quadratic form, there are only finitely many diffeomorphism types of hyperkähler manifolds. Our goal, therefore, is to find an upper bound for the second Betti number. Such a bound would represent a first step towards proving finiteness of hyperkähler manifolds; it would remain to show that only finitely many quadratic forms of each rank can arise (note that the quadratic form need not be unimodular). (Received August 13, 2007)