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Abstracts of Short Communications and Posters

Section:

5. Differential Geometry and Global Analysis

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The Rozansky–Witten invariants of hyperkähler manifolds

We investigate invariants of hyperkähler manifolds introduced by Rozansky and Witten. For each trivalent graph with $2n$ vertices we get an invariant of a hyperkähler manifold of dimension $4n$. The invariants are the same for cohomologous graphs (graphs equivalent under the IHX relations). This allows us to use hyperkähler manifolds to define elements in the dual of the graph cohomology. Conversely, we regard elements in the dual of the graph cohomology (such as those arising in Chern–Simons theory) as <u>virtual</u> hyperkähler manifolds. Certain combinations of graphs give rise to invariants which can be identified with the Chern numbers, and we use the virtual hyperkähler manifolds to obtain further unexpected relations between the graph invariants and Chern numbers.