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Rozansky-Witten-Invariants for Quaternionic Kähler Manifolds

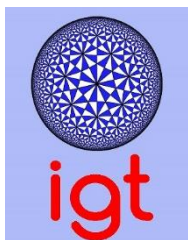
16. November 2021– 16.15 Uhr

Seminarraum IGT, Raum 7.530, Pfaffenwaldring 57

Abstract: In its original form Rozansky-Witten invariants define a pairing between compact hyperkähler manifolds and knots by means of the so-called Kontsevich integral. Rozansky-Witten invariants may thus be seen as invariants of knots parametrized by compact hyperkähler manifolds or alternatively as invariants of hyperkähler manifolds parametrized by elements of suitable graph algebras.

Taking the latter point of view in the talk we discuss the relevance of graph algebras in the theory of symplectic invariants, and use the graphic description of invariants to generalize the Chern-Weil to a Rozansky-Witten homomorphism for hyperkähler and quaternionic Kähler manifolds. For hyperkähler manifolds the kernel of this Rozansky-Witten homomorphism contains the image of the IHX graph boundary operator, leading to rather surprising relations between Rozansky-Witten invariants like the Hitchin-Sawon relation.

For general quaternionic Kähler manifolds the Hitchin-Sawon relation fails to be true due to the presence of additional boundary terms. Studying these boundary terms in more detail we address the Salamon conjecture for quaternionic Kähler manifolds of positive scalar curvature in the following way: Whether a quaternionic Kähler manifold of positive scalar curvature is a symmetric space or not, is completely determined by some of its characteristic numbers.



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