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Mathematical Physics

From simplicial Chern-Simons theory to the shadow invariant II

Atle Hahn

(Submitted on 3 Jun 2012)

This is the second of a series of papers in which we develop a "discretization approach" for the rigorous realization of the non-Abelian Chern-Simons path integral for manifolds M of the form M=Sigma x S1 and arbitrary simply-connected compact structure groups G. More precisely, we introduce, for general links L in M, a rigorous version WLO_{rig}(L) of (the expectation values of) the corresponding Wilson loop observable WLO(L) in the so-called "torus gauge" by Blau and Thompson (Nucl. Phys. B408(1):345-390, 1993). For a simple class of links L we then evaluate WLO_{rig}(L) explicitly in a non-perturbative way, finding agreement with Turaev's shadow invariant |L|.

Comments:	50 pages, 7 figures
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