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Gim Seng Ng: Witten Diagrams for Torus Conformal Blocks

Tuesday 16 May 2017 14:00 (1 hour)

We give a holographic description of global conformal blocks in two dimensional conformal field theory on the sphere and on the torus. We show that the conformal blocks on the torus can be written as Witten diagrams in the thermal AdS. This is accomplished by deriving a general conformal Casimir equation for global conformal blocks, and showing that Witten diagrams obey the same equation. We study in detail the semi-classical limit, where conformal blocks are given by the action of a network of bulk world-lines obeying appropriate geodesic equations. We give an alternate description in the Chern-Simons formulation of 3D gravity, where the conformal blocks are described by networks of Wilson lines, and show that these formulations are equivalent.