PHYSICS AND ASTRONOMY
SEMINAR

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"From Maxwell-Chern-Simons Theory in AdS3 towards Hydrodynamics in 1 + 1 Dimensions"

Abstract

We study Abelian Maxwell-Chern-Simons theory in three-dimensional AdS black hole backgrounds for both integer and non-integer Chern-Simons coupling. In particular we find exact solutions in the low-frequency, low-momentum limit, $\omega, k << T$ (hydrodynamic limit). Using the holographic principle, we translate our results into correlation functions of vector and scalar operators in the dual strongly coupled 1+1-dimensional quantum field theory with a chiral anomaly at non-zero temperature T. Starting from the conformal case we show applicability of the hydrodynamic limit and discuss extensions to the non-conformal case. Correlation functions in the conformal case are confirmed by comparison to an exact field-theoretic computation. Also a top-down string construction is provided as the ultraviolet completion for our Maxwell-Chern-Simons actions.

Monday, February 03, 2014
2:30 p.m.
Elliott Building
Room 060