

Abstract Submitted
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Spontaneously **Generated**
Inhomogeneous Phases via Holography¹ KUBRA YETER, The University of Tennessee, Knoxville, JAMES ALSUP, The University of Michigan-Flint, Flint, ELEFTHERIOS PAPANTONOPOULOS, National Technical University of Athens, GEORGE SIOPSIS, The University of Tennessee, Knoxville — We discuss a holographic model consisting of a $U(1)$ gauge field and a scalar field coupled to a charged AdS black hole under a spatially homogeneous chemical potential. By turning on a higher-derivative interaction term between the $U(1)$ gauge field and the scalar field, a spatially dependent profile of the scalar field is generated spontaneously. The critical temperature at which the transition to the inhomogeneous phase occurs is calculated for various values of the parameters of the system. By solving the equations of motion below the critical temperature we show that the dual gauge theory on the boundary spontaneously develops a spatially inhomogeneous charge density.

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