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color superconductivity in general dimension via holography

We generalize the concept of holography for the color superconductivity (CSC) phase by considering a d-dimensional Anti de Sitter (AdS) space instead of the traditional 6 dimensions. The corresponding dual field theory is a gauge theory with $SU(N_c)$ symmetry defined in $(d-1)$-dimensions that, despite lacking a confinement phase, retains characteristics consistent with quantum chromodynamics (QCD) CSC. We then used a holographic model based on Einstein-Maxwell gravity and the standard Maxwell interaction in the d-dimensional AdS space to investigate this phenomenon for the number of colors $N_c \geq 2$ without confinement phase, identifying the dimensions where the model remains valid for $N_c = 2$.

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