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Strong correlations and inhomogeneous environments in holographic superconductors S. PAPANIKOLAOU, Cornell University, R. FLAUGER, Yale University, E. PAJER, Cornell University — Holographic superconductors are strongly coupled superconductors that enjoy an explicit weakly coupled gravity dual description via the AdS/CFT correspondence. Even though the dual description includes a condensing U(1) scalar field, the superconducting state is certainly unconventional, but not explicitly known. We study the role played by inhomogeneous environments in holographic superconductors and compare it with the expectations from standard BCS-like theories. We study the variations of the critical temperature and the coherence length as a function of the amplitude and modulation wavelength of the imposed perturbations. Through the exact solutions of this model, we shed light and provide intuition on the role of inhomogeneities in unconventional superconductors.

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