

# Holographic Fermions in Striped Phases

Li Li\*

*CAS Key Laboratory of Theoretical Physics, Institute of Theoretical Physics,  
Chinese Academy of Sciences, Beijing 100190, China.*

## Abstract

We investigate holographic fermions in uni-directional striped phases, where the breaking of translational invariance can be generated either spontaneously or explicitly. We solve the Dirac equation for a probe fermion in the associated black hole background. When the spatial modulation effect becomes sufficiently strong, we see a gradual disappearance of the Fermi surface along the symmetry breaking direction, in all of the cases we have examined. The resulting Fermi surface appears to consist of detached segments, a phenomenon reminiscent of Fermi arcs. This effect appears to be a generic consequence of strong inhomogeneities, independently of whether translational invariance is broken spontaneously or explicitly.

**Reference:** S. Cremonini, L. Li and J. Ren, “Holographic Fermions in Striped Phases,” JHEP **1812**, 080 (2018) [arXiv:1807.11730 [hep-th]].

---

\*Electronic address: liliphy@itp.ac.cn