

TEP Seminar

UCLA

Tuesday, October 4 @ 4:00 PM

Physics & Astronomy Building (PAB) 4-330

Spectral Weight in Holographic Superfluids

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The spectral weight is an important and interesting field theoretic quantity. It directly counts the number of degrees of freedom at a given momentum. Therefore, calculating a nonzero value for the spectral weight at low energy and over a finite range of momenta is a signature of a Fermi surface. In a previous work, we calculated the low energy spectral weight for a semi-local quantum liquid in a holographic setting, and discovered that it was nonzero over a finite range of momenta. We attributed this Fermi surface behavior to the charges existing behind the black hole horizon. In this work, we calculate the spectral weight for a holographic superfluid. One would expect to find zero spectral weight in this situation, since here the bulk charges are in front of the horizon and manifestly form a condensate. Surprisingly, we find a result to the contrary, which raises interesting questions about bulk degrees of freedom and/or the connection between the bulk and boundary charge distributions. We interpret these results and give directions for future work.