

Abstract Submitted
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Exact critical exponents for the antiferromagnetic quantum critical metal near three dimensions PETER LUNTS, ANDRES SCHLIEF, SUNG-SIK LEE, McMaster University/Perimeter Institute for Theoretical Physics — We study the low energy field theory that describes the antiferromagnetic quantum critical metal. Earlier works have approached this problem by extending the spatial dimension from $d = 2$ to $d = 3 - \epsilon$ to gain perturbative control. We extend this work and find that the low energy theory can be studied in a controlled way even when ϵ is not small due to an emergent control parameter. This allows us to find exact values for the critical exponents of the theory. We describe the limitation of the ϵ expansion and the strategy of the non-perturbative framework that eventually lead to the solution in $d = 2$.

S. Sur, S.-S. Lee, *Phys. Rev. B* **91**, 125136 (2015).

P. Lunts, A. Schlief, and S.-S. Lee, arXiv:1701.08218

A. Schlief, P. Lunts, and S.-S. Lee, arXiv:1608.06927

A. Schlief, P. Lunts, and S.-S. Lee, *in preparation*

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