The Case for Emergent Gravity

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(Dated: January 17, 2019)

Abstract

It is possible that gravitation emerges as an artifact of physics that is nongravitational *a priori*. In recent years several mechanisms for emergent gravity have been explored. I will describe one such scenario and explain how emergent gravity can address certain outstanding puzzles in cosmology and quantum gravity.

[1] J. Erlich, "Stochastic Emergent Quantum Gravity," Class. Quant. Grav. **35**, no. 24, 245005 (2018) doi:10.1088/1361-6382/aaeb55 [arXiv:1807.07083 [gr-qc]].

[2] C. D. Carone, J. Erlich and D. Vaman, "Emergent Gravity from Vanishing Energy-Momentum Tensor," JHEP **1703**, 134 (2017) doi:10.1007/JHEP03(2017)134 [arXiv:1610.08521 [hep-th]].

[3] C. D. Carone, J. Erlich and D. Vaman, "Composite gravity from a metric-independent theory of fermions," arXiv:1812.08201 [hep-th].

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