

Quantum symmetry breaking: Observation of scale anomaly in graphene

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Scale invariance is a common property of our everyday environment. Its breaking gives rise to less common but beautiful structures like fractals. At the quantum level, breaking of continuous scale invariance is a remarkable example of quantum phase transition also known as scale anomaly. The general features of this transition will be presented at an elementary quantum mechanics level. Then, we will show recent experimental evidence of this transition in graphene.

- [1] Observing a Scale Anomaly in Graphene: A Universal Quantum Phase Transition, O. Ovdatt, J. Mao, Y. Jiang, E. Y. Andrei, and E. Akkermans, under review in Nature Comm. (2017)