

Probing the Fundamental Nature of Spacetime with the Renormalization Group

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Probing the fundamental nature of fluctuating membranes with the Renormalization Group

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Membranes provide exciting physical systems with a strong interplay between local order and geometric fluctuations. They are also a non-trivial arena, both theoretical and experimental, in which the findings of the non-perturbative renormalization group can be tested, thus enhancing the confidence of the same applications to quantum gravity. We will review the distinct universality classes of membranes, the corresponding order parameters and the effective long-range interactions, that determine the rich membranes' phase diagram. Guided by these results, we will attempt to draw some lesson that can be applied in the context of quantum gravity.

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