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# Counting instantons at strong coupling

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The exact computation of partition functions of four-dimensional theories with extended supersymmetry by means of localization techniques hinges on the existence of a Lagrangian description. On the one hand, it is known that in many cases such a description is only accurate in certain regions of moduli space, such as weak-coupling phases. On the other hand, there are also many examples of non-Lagrangian quantum field theories, which cannot be studied through localization. This raises the question of what replaces the definition of the partition function of a quantum field theory in the broader setting, and how such an object may be computed. I will discuss a geometric definition of instanton partition functions based on the notion of quantum curves associated to certain quantum field theories. I will argue that this definition encompasses the standard one at weak coupling, but also extends to strong coupling, where it is amenable to direct computation.

## In-person participation

Yes

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