$T\overline{T}$ Deformations

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Abstract:

Every two-dimensional quantum field theory admits a special set of composite irrelevant operators, constructed out of stress-energy tensor components. These can be used to trigger deformations of the QFT which, although irrelevant from the RG point of view, have the remarkable property of being universal and exactly solvable. In the last few years there has been a growing interest in the high energy theory community on this subject, with a particular focus on the simplest amongst these deformations, enforced by the determinant of the stress-energy tensor. This deformed theory, which is known as $T\overline{T}$ deformation, displays many beautiful and non-trivial properties, such as the existence a Hagedorn temperature and of Landau-like singularities in the spectrum, an equivalent expression in terms of topological gravity, an interpretation in the context of the holographic correspondence etc… In these lectures we will present an introduction to this subject and review recent developments. Our focus will be on the $T\overline{T}$ deformation and its classical and quantum properties.