

# String and field theory techniques in $T\bar{T}$ and related deformations

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**Abstract:**We calculate the spectrum of a two dimensional CFT on a cylinder, perturbed by a general linear combination of  $T\bar{T}$ ,  $J\bar{T}$  and  $T\bar{J}$ , by utilizing the relation of this problem to certain solvable single trace current-current deformations of the worldsheet theory of strings on  $AdS_3$ . We show that this spectrum is real if and only if the dual bulk geometry has signature (1,2) with no closed timelike curves. We also comment on the relations of string theory on  $AdS_3$  and its deformations to symmetric product CFT's, matrix string theory, and a black hole description of highly excited fundamental strings.

## References

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