

# Worksheet: Evaluating $\zeta(2)$ by random walk

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I'd like to do a chops piece. There is a lot of discussion of entanglement entropy and it's written in foreign language. We just choose a point of contact and try it:

$$\langle\langle S|q^{\sum_{i=1}^N(L_0^i+\bar{L}_0^i-\frac{1}{12})}|S\rangle\rangle = g^2 \Theta_{\Lambda}(2it) [\eta(2it)]^{-N}$$

I don't know why they wrote a thing, or the meaning of certain symbols such as  $|S\rangle\rangle$ . I have seen the symbol  $L_0$  but I don't know quite what it's doing here.  $\Theta$  functions are very common place in math, but they are not the only modular forms in existence.

It's very very difficult to say what these people are writing about. I write a similar proposal before and never did anything with it.

This is **Conformal Field Theory**. Depending on who you ask, it is on solid or shaky foundation. We have this other buzzword that we like **Entanglement Entropy**.

Let's say it one more time, "Entanglement Entropy". Feels good, don't it?

## References

(1) Michael Gutperle, John D. Miller **Entanglement entropy at CFT junctions** [arXiv:1701.08856](#)