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Jackiw-Teitelboim gravity with matter as a matrix integral and the Eigenstate Thermalization Hypothesis

I argue for the existence of single-trace, two-matrix models that are dual at the level of the disk to Jackiw-Teitelboim gravity minimally coupled to a massive scalar field. One matrix is interpreted as the Hamiltonian of the boundary quantum mechanical theory, while the other matrix is an operator that is dual to the bulk field. In one of the models, before the double-scaling limit is taken, the disk correlators agree with those computed by Berkooz et al in the double-scaled SYK model. I explain how one can determine the connected two-boundary (double-trumpet) correlators of these models without knowing the detailed form of the matrix potential. These models refine the Eigenstate Thermalization Hypothesis.

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