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# Quantum gravity microstates from Fredholm determinants

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This talk describes how to go well beyond the perturbative correspondence between JT gravity and large N matrix models (discovered by Saad, Shenker and Stanford) to uncover detailed information about the individual microscopic states of the matrix model. This corresponds to data about the underlying microstates of the gravity system, which are crucial in the regime where the smooth spacetime description is inadequate. This system is therefore a fully tractable model of quantum gravity where the phenomenon of emergent spacetime is manifest. They key new tool in this context is a Fredholm determinant, which can be computed using numerical methods.

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