The Partition Function for Semiclassical Gravity and Cosmic Strings CHRISTOPHER DUSTON, Florida State University — This talk will present a partition function for semiclassical gravity, constructed by representing smooth 4-manifolds as branched covers of the 4-sphere. By a result of Piergallini [1994], these manifolds are branched over immersed surfaces, so we will present several examples of codimension-2 foliations of the 4-sphere to illustrate the procedure for calculating the Einstein-Hilbert action. We will make this as general as possible by using the Weierstrass representation of surfaces, which can be taken flat with conical singularities. These conical singularities can be interpreted as cosmic strings, making a connection between semiclassical gravity and symmetry breaking in the early universe.

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