Sphere and disk partition functions in Liouville and in matrix integrals
(Zoom Seminar)

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Zoom link shall be shared separately

We compute the sphere and disk partition functions in semiclassical Liouville string theory (without any vertex operator insertions) and analogous quantities in double-scaled matrix integrals. The quantity sphere / disk^2 is independent of the string coupling constant and we find a precise numerical match between the Liouville answer and the matrix integral answer. An application is to show that the sphere partition function in JT gravity is infinite.

The main idea in the string theory computation is that the Liouville path integral has a noncompact family of saddle points that are related by the PSL(2,C) and PSL(2,R) conformal symmetries on the sphere and the disk, respectively. Faddeev-Popov gauge fixing then allows us to overcome the usual difficulty associated with residual gauge symmetries on the sphere and the disk.

(Based on work soon to appear with Douglas Stanford and Cynthia Yan.)

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