

Random volumes from matrices

Sotaro Sugishita (Osaka Univ.)

Based on the works:

[1] JHEP1507(2015)088 (arXiv:1503.08812)

[2] PTEP2016(2016)5,053B04 (arXiv:1504.03532)

[3] To be published in PTEP (arXiv:1603.05199)

[4] work in progress

with Masafumi Fukuma (Kyoto U.) & Naoya Umeda (Kyoto U.)

Poster presentation @ OIST

Quantum Gravity

◆ Fundamental problem in theoretical physics

■ Quantum fluctuations of spacetime

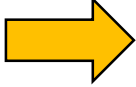
■ What is the fundamental degrees of freedom?

- strings?
- D-branes?
- ...
- **matrices?**

Matrix Models

- Give a definition of a class of 2D gravity
- Emergence of spacetime (Holography)
- Analytical treatment to take a continuum limit

Triangle-Hinge Models

- Dynamical variables are matrices
- Generate discretized 3D space (random volumes) with various matter fields
- Numerical computations  Critical point
- Analytically tractable?
- Continuum limit?

