Holography

Interface Course, Semester 2

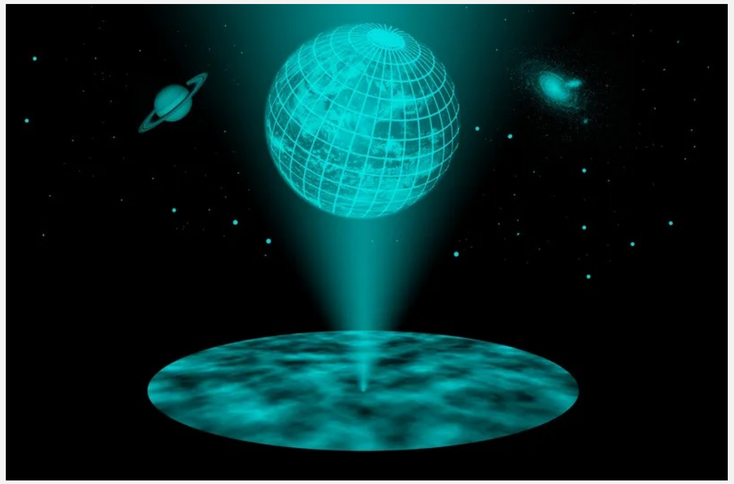
Lecturer: Matthew Walters (Heriot-Watt), m.walters@hw.ac.uk

Prerequisites:

- Quantum Mechanics, some Group Theory and Differential Geometry
- Quantum Field Theory very useful but not required
- Encouraged to take Conformal Field Theory and Vertex Algebras (Semester 1)

Useful Resources:

- Jared Kaplan, “Lectures on AdS/CFT from the Bottom Up”
- Raman Sundum, “From Fixed Points to the Fifth Dimension”
- João Penedones “TASI Lectures on AdS/CFT”



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- Introduction to correspondence between theories of quantum gravity and non-gravitational theories in one fewer spacetime dimension
- “Bottom-up” approach: discuss universal features of gravity and how they can be reinterpreted in new language of conformal field theory
- Planned topics: Anti-de Sitter spacetime, conformal field theory, conformal bootstrap, Witten diagrams, black holes, finite-temperature physics, entanglement entropy, bulk locality, holographic renormalization