



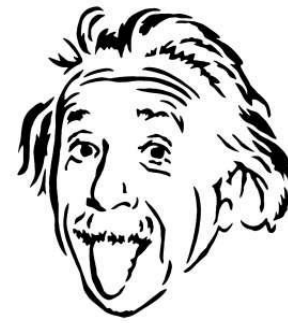
BREAKING THE WALL OF QUARK CONFINEMENT

JAKUB JANKOWSKI

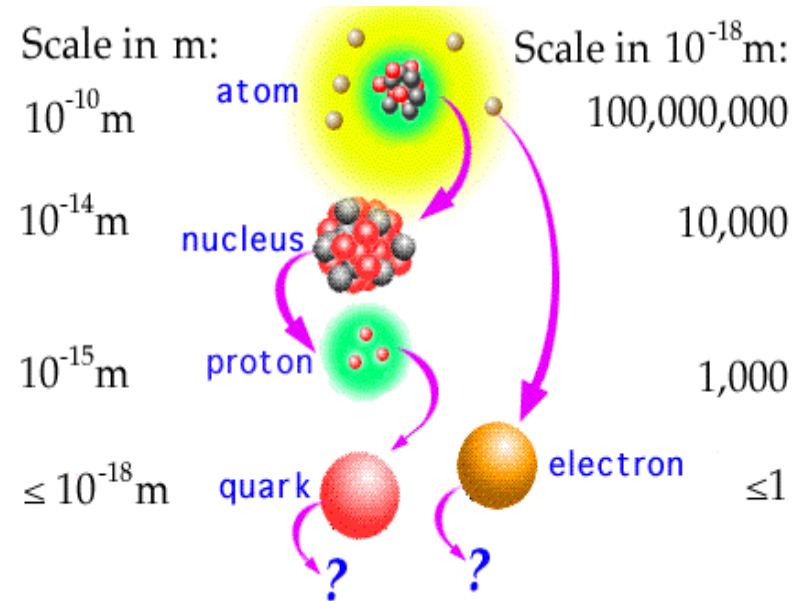
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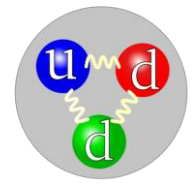
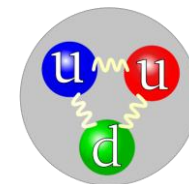


- Protons and neutrons are composed of quarks and gluons
- **CONFINEMENT:** quarks and gluons are not observed as free particles
- **What is the precise theoretical formulation of confinement?**
- **What is confinement mechanism?**
- Standard concepts like perturbative theory fail to answer the question
- Deep insight into strong nuclear force

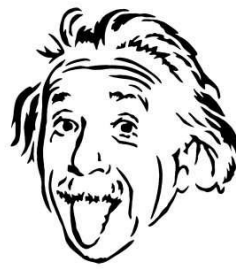


Proton

Neutron

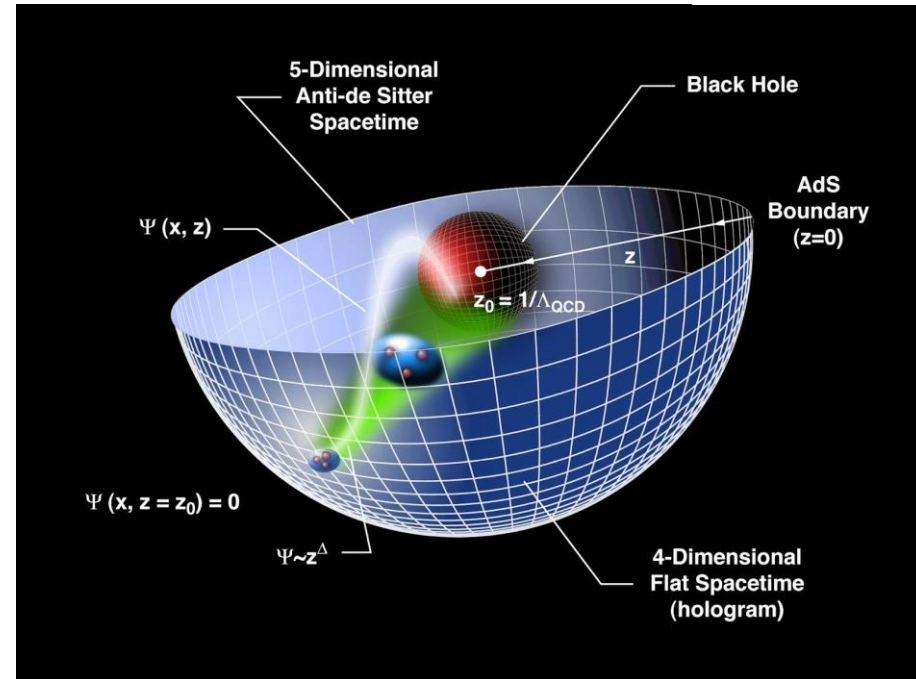


CERN@Geneva



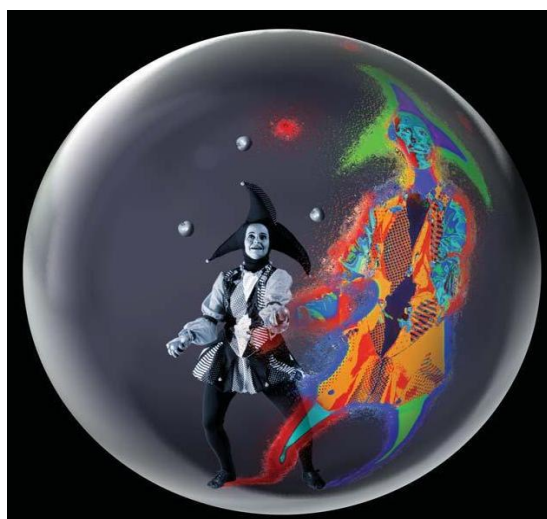
- Gauge/gravity duality provides a simple description of a complicated problem!
- Analogue system:
Black Hole - matter hidden behind the event horizon
- Gravitational formulation of particle interactions
- Quantum information description of confinement
- Much more: **dynamics of phase transitions!**

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Key idea!

Using gauge/gravity duality in order sharpen quantum information quantities to formulate precisely the confinement effect



QUESTIONS?