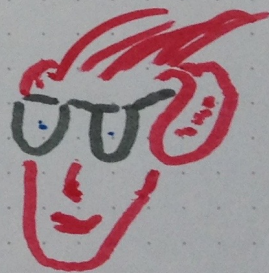


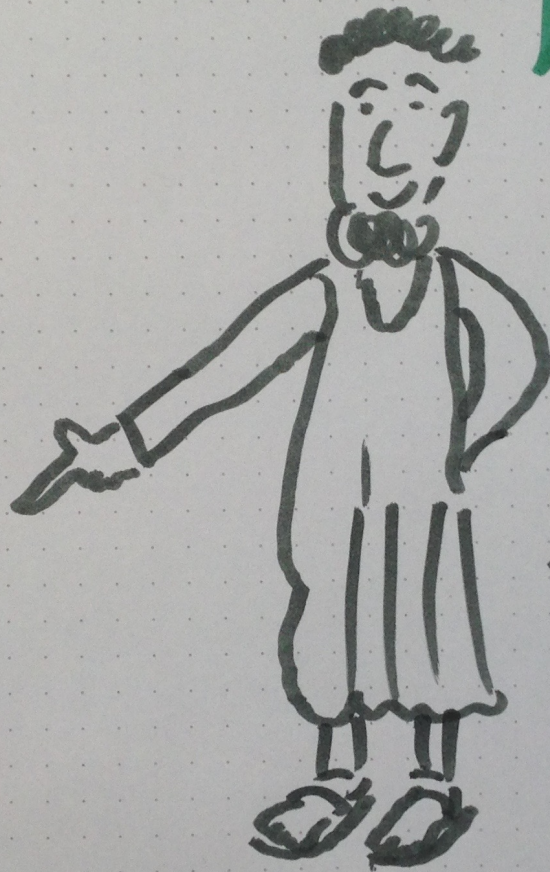
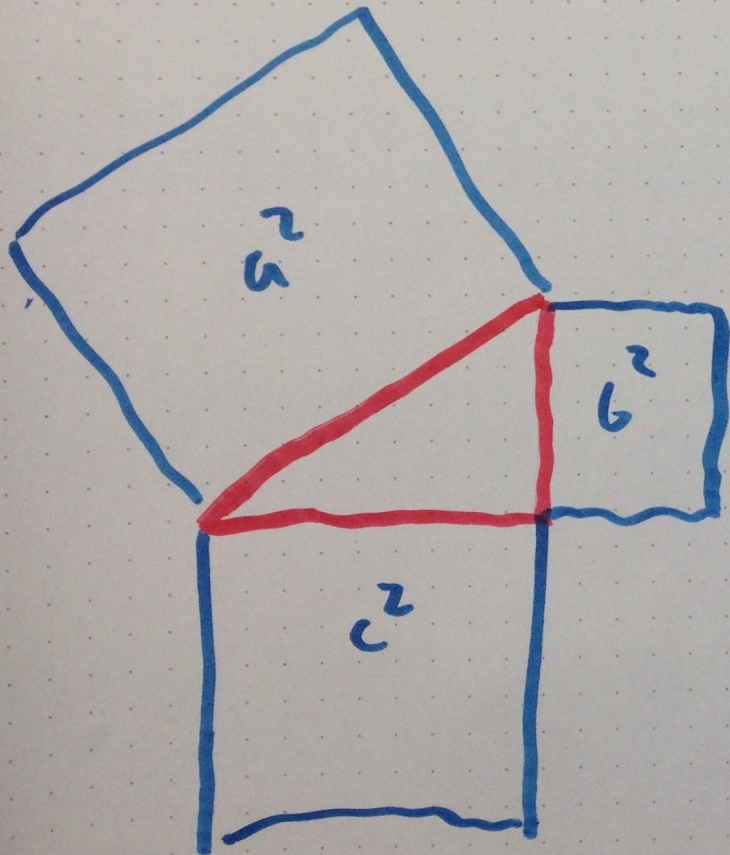
Bits quondam,
bits futurus

Seth Lloyd

Paul Benioff symposium



Pythagoras





Von Neumann



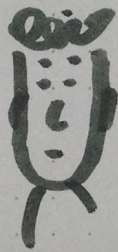
Landauer



Deutsch



Zuse



Feynman



Bennett

Hamiltonian quantum computing

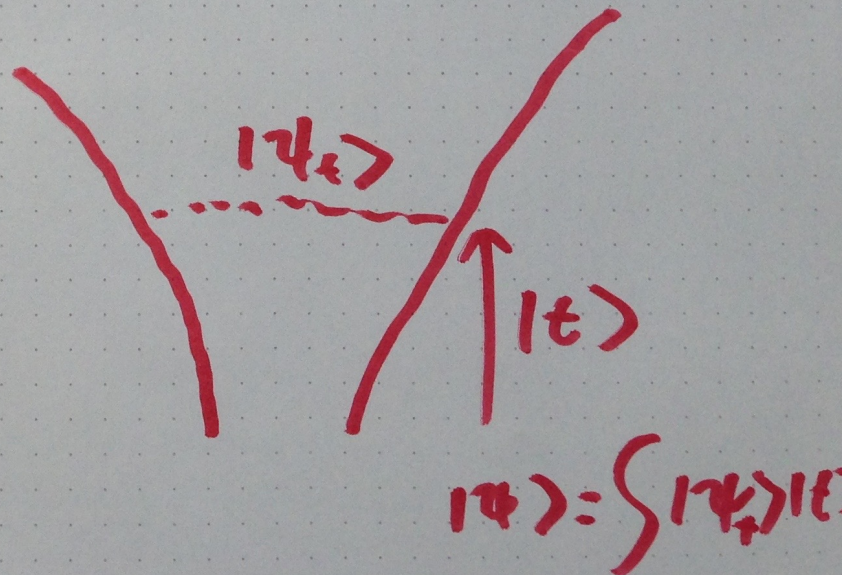
$$H = \sum_t U_t \otimes |t+1\rangle\langle t| + U_t^\dagger \otimes |t\rangle\langle t+1|$$

ground state

$$|\psi_0\rangle = \sum_t U_t \dots U_0 |b_0\rangle \otimes |t\rangle$$

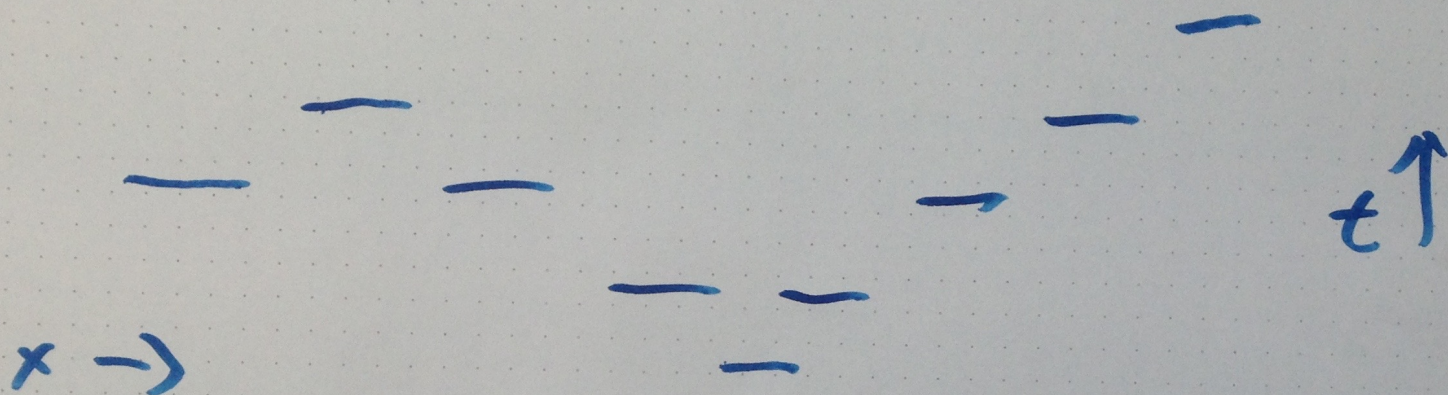


$$H|\psi\rangle = 0$$





Margplus

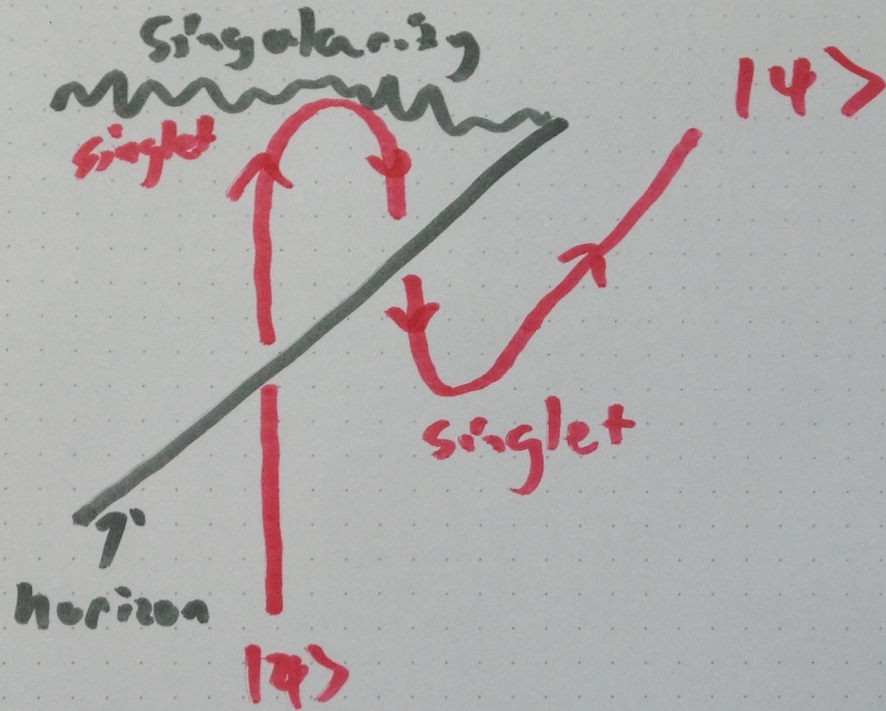
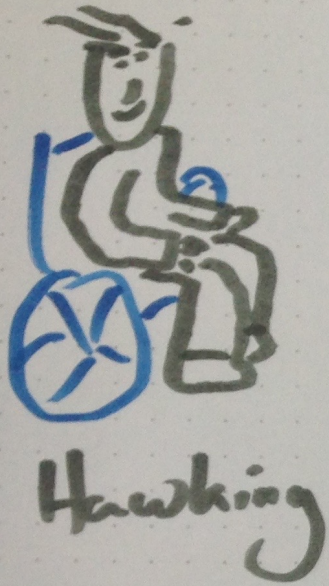


$$H = \sum_{x,t} U_{x,t} \otimes |x,t+1\rangle\langle x,t|$$

+ H.C.

$\otimes |x-1,t\rangle\langle x-1,t|$
 $\otimes |x+1,t\rangle\langle x+1,t|$

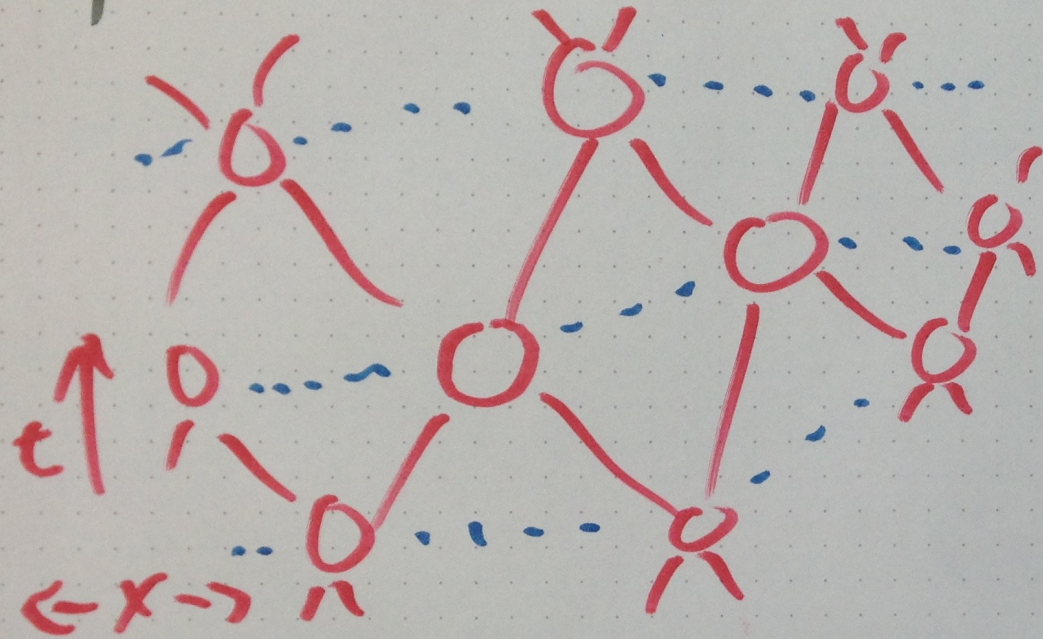
Many fingered time



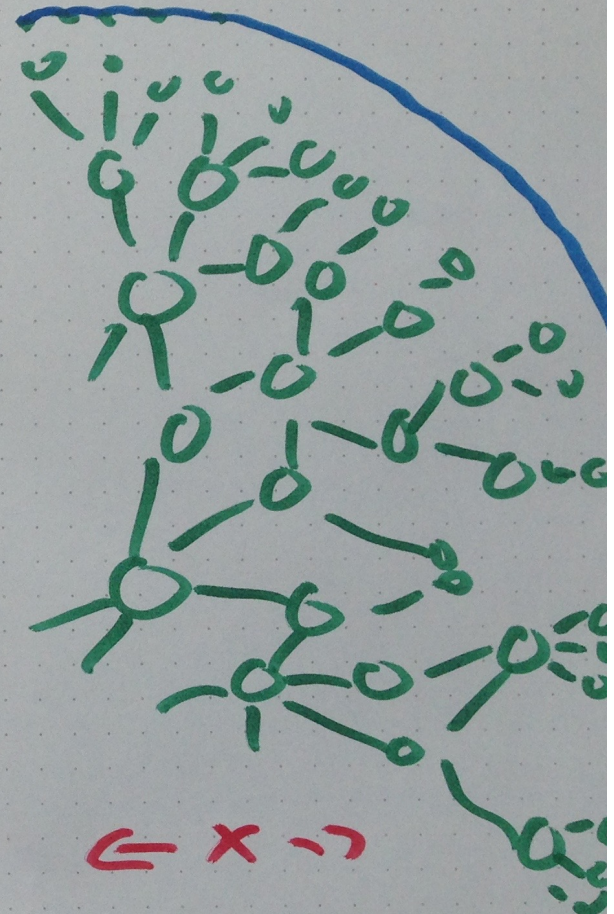
Hologwicz - Maldacena:

post selected teleportation

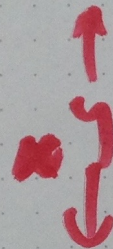
Spacetime and tensor networks

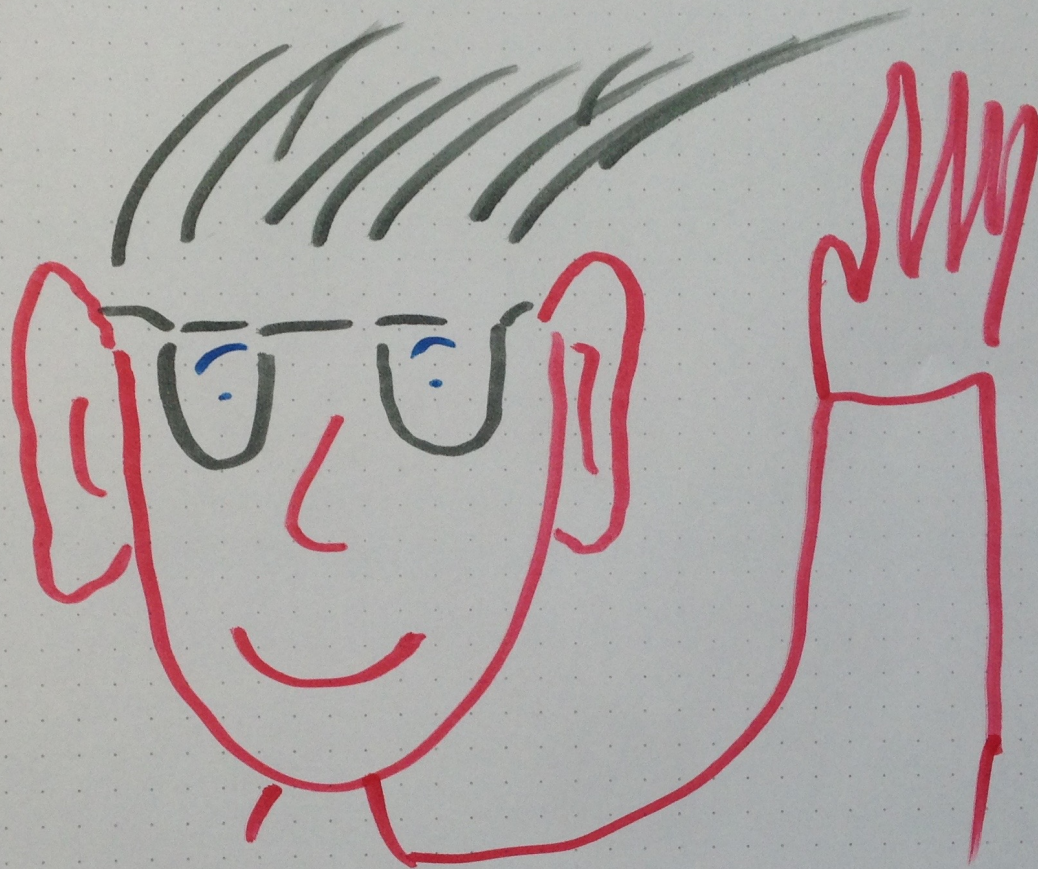


add
curvature



AdS-CFT
as
MERA





Thank you, Paul!