Wolfram Physics Project | Visual Summary

Rule (example)

$$\{\{x, y\}, \{x, z\}\} \rightarrow \{\{x, z\}, \{x, w\}, \{y, w\}, \{z, w\}\}$$

Rule defines transformations for collections of abstract elements

Sequence of updating events

initial condition

Spatial hypergraph

Space and matter are emergent features of the hypergraph

Elementary particles are localized persistent structures in the hypergraph

Multiway states+causal graph

initial condition

multiway branches

updating event

causal connections

branchlike hypersurface

10^{400} *steps*

Our universe (?)

Branchial graph

Connections are entanglements between quantum states

Branchial graphs define quantum superpositions

Multiway states graph

Multiway causal graph

Spacetime causal graph

timelike hypersurface

spacelike hypersurface

Energy is flux of causal edges through spacelike hypersurfaces

Momentum is flux of causal edges through timelike hypersurfaces

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