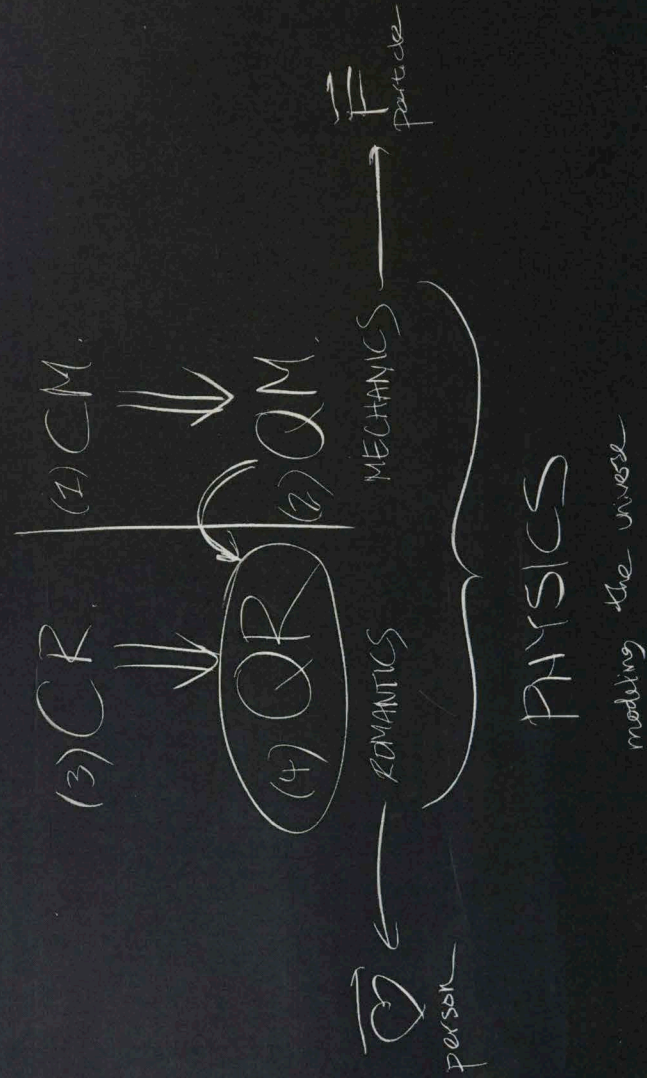


CHALKBOARDS

CHVKE80252



QM

SPIN

(classical) $\vec{\mu}$

$$\rightarrow \mu_z = |\vec{\mu}| \cos \theta$$

 $\rightarrow (-\hbar/4, +\hbar/4)$
ACTUAL: $\mu_z = \pm \frac{\hbar}{2}$
 \downarrow
 $\text{spin-}\frac{1}{2}$

(NEW TO QM)

DISCRETE
FINITE

POSITION & MOMENTUM

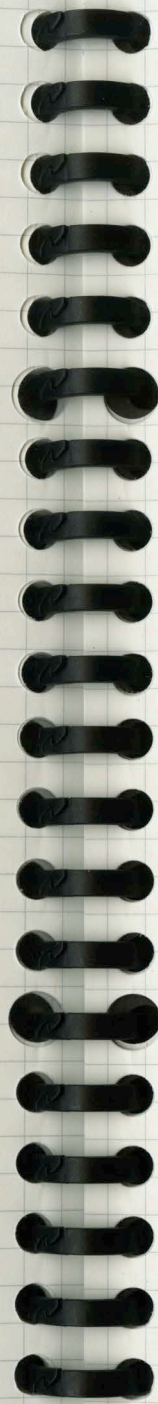
(same as classical)

 $\vec{x} \neq \vec{p}$

ACTUAL:

 \rightarrow DISCRETE, FINITECANONICALLY
CONJUGATE,

$$\Delta x \Delta p \geq \frac{\hbar}{2}$$



QR

PERSONS

[particles]

EMOTION

(classical) FEELING

 \rightarrow I & C

ACTUAL: D & F

CANONICALLY
CONJUGATE

$$\Delta e \Delta s \geq \frac{\hbar}{2}$$

STATUS [pps/mom]

(same as classical)

ACTUAL: D & F

WHY ARE ALL MEASUREMENTS FINITE & DISCRETE?

1. ORIGIN

particles: D & F



observables: D & F

by "nature"

2. POIESIS

particles: I & C

process of creating
is discretizing

observables: D & F

by PROCESS

(of constructing reality)

WHY ARE ALL INTERACTIONS FINITE & DISCRETE?

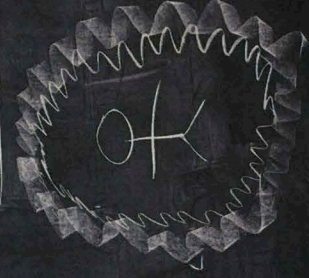
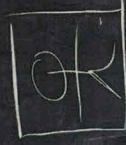
1. ORIGIN

persons: D & F



interactions: D & F

by "nature"



2. POIESIS

persons: I & C

process of
communicating
is discretizing

interactions: D & F

by PROCESS

of creating relationships

$$\begin{array}{c} \angle 2-1 \\ \angle 2+1 \\ 2/4-u/ds \end{array}$$

$$\left| \begin{matrix} z_1 & z_2 \\ z_1 + \frac{1}{2} & z_2 + \frac{1}{2} \end{matrix} \right|$$


spin-1: 11, 15, 11, 0, 7, 11, 1, 17

highes spin, more bases,

diff. spin.
partic. (2)
(1)

$$\frac{1}{2} \left(\frac{1}{2} \right)$$

und



A horizontal number line with an arrow pointing to the right. It has four tick marks labeled from left to right as $\frac{1}{2}$, 1, $\frac{3}{2}$, and 2.

TEMPORAL
VARIABILITY
(T.O.C)

same
diff.

same \bar{F} ,
diff. end valve!

02

$$e_{\text{mat}} - 1/2 \quad \begin{array}{c} \text{1327} \\ \text{1327} \end{array}$$

LOVES ME "LOVES ME NOT"

emot-1: |  |  |  |  |  |  |  | 

"IT'S COMPLICATED"

higher end, were SHADES OF COMPLICATION
1875 & 1876 always possible!

emot-1, general state

you

$$|\psi\rangle = \frac{1}{\sqrt{2}}(|0\rangle + |1\rangle)$$

LOVES ME

Jan 25 AM

ITS COMPLICATED

OBSERVER

LOVE QUESTIONS

2
 11
 1
 1
 1
 1

I like you

② → "DO YOU LOVE ME"

DO YOU LIKE ME?

\uparrow [KIS]²

Prob of
finding you in
state LOVES ME
through \sum_i

to make a measurement:-

$$|\psi\rangle_Y \xrightarrow{\text{ASK}} \hat{L}|\psi\rangle_Y \rightarrow \langle \psi | \hat{L} | \psi \rangle_Y$$

ASK

ANSWER

↓

produces CHANGE

produces CHANGE

i.e. LQs are NECESSARY for ALL measurements on ent states.

$$\Rightarrow \|\langle \psi | \psi \rangle_Y\|^2 = \text{UNDEFINED}$$

\Rightarrow ent states need not be normalized

\Rightarrow all LQs must include normalization

how to define operator of \hat{L} on $|\psi\rangle_Y$?

matrix mechanics:

$$\langle \psi | \rightarrow (1 \ 0 \ 0)$$

$$|\psi\rangle_Y \rightarrow \begin{pmatrix} c_1 \\ c_2 \\ c_3 \end{pmatrix}$$

$$\hat{L}_{M \rightarrow Y} \rightarrow \begin{pmatrix} \langle \psi | \hat{L}_{M \rightarrow Y} | \psi \rangle_Y & \langle \psi | \hat{L}_{M \rightarrow Y} | \psi \rangle_Y & \langle \psi | \hat{L}_{M \rightarrow Y} | \psi \rangle_Y \\ \langle \psi | \hat{L}_{M \rightarrow Y} | \psi \rangle_Y & \langle \psi | \hat{L}_{M \rightarrow Y} | \psi \rangle_Y & \langle \psi | \hat{L}_{M \rightarrow Y} | \psi \rangle_Y \\ \langle \psi | \hat{L}_{M \rightarrow Y} | \psi \rangle_Y & \langle \psi | \hat{L}_{M \rightarrow Y} | \psi \rangle_Y & \langle \psi | \hat{L}_{M \rightarrow Y} | \psi \rangle_Y \end{pmatrix}$$

$$\hat{L}_{M \rightarrow Y} = \langle \psi | \hat{L}_{M \rightarrow Y} | \psi \rangle_Y$$

PP.S

$$\hat{L}_{M \rightarrow Y} |\psi\rangle_Y \neq \hat{L}_{O \rightarrow Y} |\psi\rangle_Y$$

ME → YOU

OTHER → YOU

