quantum

- particles can be in multiple states at the same time

- other dimensions

- particles can influence each other over great distances

- entities can be summoned from other realms that exist in the quantum space

energy

hydros - utilising fluid in transmitting power

energy stored in fields = the total energy required to assemble the fields

overunity energy

from over- + unity (“the number "1"”), referring to the fact that an over-unity **device should produce more kinetic energy than whatever potential it receives as input**. Coined to avoid patent rules that prevent impossible technologies such as perpetual motion machines being patented.

dissipative

something that causes energy or resources to be gradually lost or dispersed. It's like when a material or system absorbs energy and releases it as heat, gradually losing its initial energy or organisation over time.

fussion v. fission

fusion is the process of combining atomic nuclei to release energy, while fission is the splitting of atomic nuclei to release energy.

fission: the division of a heavy atom into 2 light atoms.

fussion v. fission (cont)

fusion: two light atoms combine to form a larger atom.

*the phenomena of nuclear fusion and nuclear fission have one unique point in common: the atom.**

building blocks

the up quark, the down quark and the electron. This set of particles is all that's needed to make protons and neutrons and to form atoms and molecules.

self-organised criticality

when things in nature, like sand or other systems, arrange themselves in a way that they are always on the edge of something interesting happening, like an avalanche, without anyone making it happen on purpose.

It's a concept in science that says in some systems, like the sandpile, things can organize themselves to a point where they are about to change or have an "avalanche" without anyone planning or controlling it. It's like nature's way of creating order and chaos all on its own.

fluctuation-dissipation theorem

fluctuations: random variations or noise in a system’s properties (temperature, pressure or particle position)

dissipation: process where a system loses energy to its surroundings, often covering kinetic or potential energy into heat. When a system is subjected to an external force, it tends to return to equilibrium, and this return involves dissipative processes.*

fluctuation-dissipation theorem (cont)

the theorem suggests that the natural jostling of molecules in the coffee (fluctuations) influences how the coffee responds when you disturb it by stirring (dissipation).*

hypersonic

one that exceeds five times the speed of sound, often stated as starting at speeds of Mach 5 and above.

supersonic

faster than the speed of sound, or able to fly faster than sound travels.

metals

metal	density (g/cm^3)	melting point (°C)	young's modulus (GPa)	th co tiv (W
aluminum	2.70	660	69	23
copper	8.96	1085	117	40
iron	7.87	1538	211	80
gold	19.32	1064	79	31
silver	10.49	961	83	42
titanium	4.51	1668	116	21
zinc	7.14	419	108	11

hydrocarbon

if all fossil fuels are complex hydrocarbons and say all hydrocarbons originate from life; then where did this complex life come from? as complex as life is, my theory is it started from some existing pools of complex hydrocarbons. so, fossil fuels were not formed, they have always been there in one form or another.

oil is abiotic, a product of the earth's magma, and far more abundant than many are aware.

starlite

an intumescent material said to be able to withstand and insulate from extreme heat.

force fields

fields are not some "fairy-tale" fictions just used to compute forces. they are real; they have momentum, stress, energy; they interact with matter, charges; exchange energy and momentum with them.

energy conservation is a local process which evidently implies electromagnetic field between two interacting charges must mediate the energy and momentum exchange between the charges and hence must have energy density and momentum.

gravity is an effect

it is a fundamental force, the way we experience it, especially under the framework of general relativity, can be described as an **effect of the curvature of spacetime**.

energy stored in a field

concept of fields:	grasping the idea of fields and assigning energy to them can be challenging. sometimes, it is simpler to visualize energy stored in objects (like masses) rather than in fields.
gravitational potential energy:	when separating two masses, gravitational potential energy increases. the energy is considered stored in the system of the two masses, not the field.
electronmagnetic waves:	an electromagnetic wave has both electric and magnetic fields, oscillating at right angles, carrying energy.
maxwell's equations:	these demonstrate that energy in electromagnetic waves is stored in the electric and magnetic fields, reinforcing the idea that fields can store energy.

energy stored in a field (cont)

work and energy transfer:	creating electromagnetic waves requires work, transferring energy to the electric and magnetic fields of the wave.

thrust

the force that propels an object forward, typically used in the context of engines or rockets.

standard deviation

a standard deviation (or σ) is a measure of how dispersed the data is in relation to the mean.

luminance

a **photometric measure of the luminous intensity per unit area of light travelling** in a given direction.

simulation theory

a theoretical hypothesis that says what people perceive as reality is actually an advanced, hyper-realistic computer simulation, possibly overseen by a higher being.

aes and block ciphers

AES-256 - the block cipher - as far as we know hasn't been broken. It has not even been close to broken.

we cannot prove that it is secure. (an algorithm that is able to crack AES may be found.)

aes and block ciphers (cont)

most ciphers cannot be proven to be secure. Only a handful algorithms such as the one-time-pad are secure in the information-theoretical sense.

*tldr: when building a secure system you may use AES-256, it's considered secure even if this cannot be proven. Other aspects of the system are much more likely to fail than AES-256 - the block cipher by itself.**

quantum financial system (qfs)

the name for a theory that stipulates the global financial infrastructure will be migrated to a new system based on cutting-edge technologies such as quantum computing, artificial intelligence, and blockchain.

one-time pad

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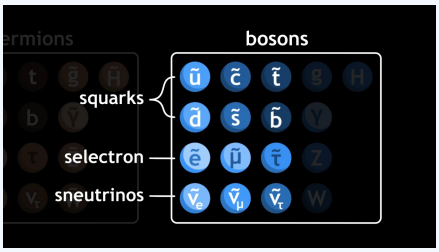

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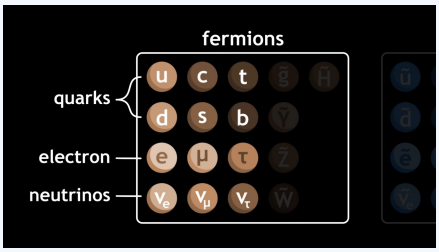
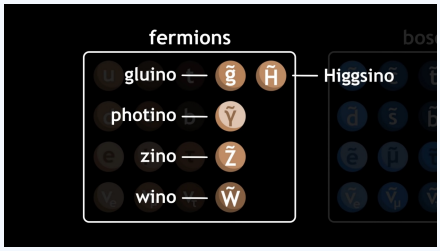


quantum mechanics



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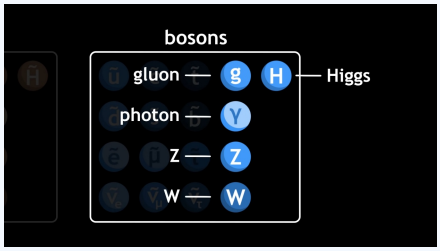
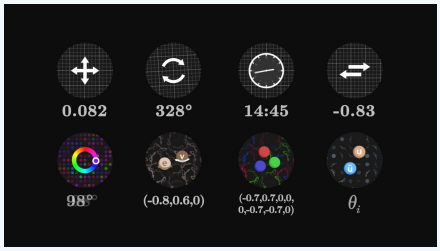


symmetries



atomic nuclei

most of the rest mass of matter is in nuclei. What gives nuclei their mass are protons and neutrons and they get most of theirs from the kinetic energy of their constituents.

h-index

measures a researcher's impact by quantifying both the number of publications and the number of citations per publication. **(30-60+ (h-index score good)**

compute chip limitation

as we continue to miniaturise chips, we'll no doubt bump into Heisenberg's uncertainty principle, which limits precision at the quantum level, thus limiting our computational capabilities. James R. Powell calculated that, due to the uncertainty principle alone, Moore's Law will be obsolete by 2036.

in other words, as we make computer chips smaller and smaller, we'll eventually reach a point where we can't make them any smaller without running into a fundamental limit called Heisenberg's uncertainty principle.

this principle says there's a limit to how precisely we can measure certain things at the tiny scale of atoms and particles. This limit will restrict how much we can improve computer performance through miniaturisation. James R. Powell did some calculations and predicts that because of this limit, a famous trend called Moore's Law, which says that the number of transistors on a chip doubles approximately every two years, won't hold true anymore by the year 2036.

brainwaves

beats:	the difference between two hertz frequencies
4hz:	enhanced memory
10hz:	healing, reduced pain
cerebral performance enhancement	
alpha brainwaves:	between 8-14hz
theta waves:	between 4-8hz

brainwaves (cont)

stimulates catecholamines, essential to learning and memory synchronise both the left and right brain.

theta brainwaves

hemi-sync / psycho-acoustics / binaural

hardware acceleration

process where applications offload certain tasks to hardware in your system, especially to accelerate a task more efficiently than is possible in software running on a general-purpose CPU.

hilbert's 8th problem

hilbert's 8th problem encompasses the Riemann Hypothesis, which posits that all non-trivial zeros of the Riemann zeta function have a real part of 1/2, and Goldbach's Conjecture, which asserts that every even integer greater than 2 can be expressed as the sum of two primes.

chaos theory

explores the effects of small occurrences that can dramatically affect the results of seemingly unrelated events.

3 sigma

data within three standard deviations from a mean:

1 sigma:	about **68%** of data points fall within 1 sigma (1 standard deviation) from the mean.
2 sigma:	about **95%** of data points fall within 2 sigma (2 standard deviations) from the mean.

3 sigma (cont)

3 sigma:	about 99.7% of data points fall within 3 sigma (3 standard deviations) from the mean.
	3 sigma = a range that covers almost all the data (99.7%) around the average value. This concept is often used in quality control and other fields to indicate that something is very unlikely to be an anomaly or error if it falls within this range.

p-value

helps decide whether results are significant in scientific experiment study. (whether the hypothesis has legs or is likely a fluke)

low p-value (typically less than 0.05, likely effective):	your results are probably not due to random chance, and there is likely a real effect or difference.
high p-value (typically more than 0.05, fluke):	your results might be due to random chance, and there may not be a real effect or difference.

heisenberg uncertainty principle

states that it's impossible to simultaneously know both the exact position and exact momentum of a particle, as the more precisely one is measured, the less precisely the other can be known.

centripetal force

force that keeps an object moving in a circular path, directed toward the center of the circle around which the object is rotating.

intellectual phase locking

refers to the scientific community's consensus to fix the speed of light at a constant value, potentially limiting open discussion on alternative measurements or variations .

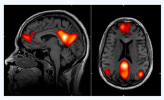
morphic resonance

rupert sheldrake's hypothesis that similar forms and behaviours influence each other across time and space through a collective memory field.

coronal mass ejection

a significant release of plasma and magnetic field from the Sun's corona that can impact Earth's magnetosphere, potentially causing geomagnetic storms.

default mode network



network of brain regions that becomes active when the mind is at rest and not focused on the external environment, often associated with daydreaming and self-referential thoughts.

henrietta lacks

cells, taken without her consent in 1951, became the first immortal human cell line (HeLa cells), revolutionising medical research and leading to numerous scientific breakthroughs.

clincal trials (phases)

pre-clincal:	cell studies (in vitro) and animal studies conducted in a laboratory to evaluate the safety, efficacy, and biological activity of a drug or treatment before it is tested in humans.	
phase 1:	(proof of concept) exploratory trials with very small doses to understand drug interaction in humans.	**several months**
phase 2:	(safe dosing) 20-80 people. try to find safe doses, observe how the drug interacts with the body, and look for side-effects	**months - 2 years**
phase 3:	(confirmation) dozens-100s people. expands the study to a larger group to assess the drug's efficacy and further evaluate its safety.	**1 - 4 years**
fda:	regulators review data from trials, consider patient perspectives on benefit vs risk, etc., to determine if drug should be approved	

clincal trials (phases) (cont)

phase 4:	(post-market) 100s-thousands people. studies to gather additional information on the drug's risks, benefits, and optimal use in the general population.	**up to 5 years**

discovery and development, preclinical research, clinical research, fda drug review, fda post-market drug safety monitoring

*77% or more move forward from phase 1, 33% move forward from phase 2, **accelerated approval drugs often go to market after phase 2**, 15-33% go to market*

clinical trials and pharma drugs

controlled group data is where it's at, without this there's a a high chance it's a miss. (it's the only data you can trust.)

no to subs:	be wary of "it works on a subgroup" tricks.
testimonies?:	patient and doctor testimonies mean nothing.
observer bias:	happens when a researcher's expectations, opinions, or prejudices influence what they perceive or record in a study. It often affects studies where observers are aware of the research aims and hypotheses. *(also called detection bias.)**

organ

(from the Latin "organum" meaning an instrument or tool) is a collection of tissues that structurally form a functional unit specialized to perform a particular function.

*theheart, kidneys, and lungs are examples of organs.**