Chaos theory about dynamic space-time curvature

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This short paper is about the dynamical flow
of Energy and Dark energy

$$E\xi = 0$$

E = Energy
ξ = Dark Energy

E

Energy is the curvature of the four-dimensional space-time
where curvature comes from gravitational attraction.

$$E = mc^2$$

where E = Energy,
m = mass,
and c = speed of light.

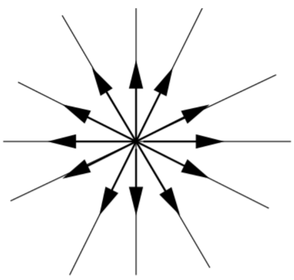
ξ

Dark Energy is the dynamic of the four-dimensional space-time
where dynamic comes from the expansion of time.

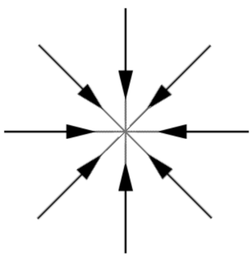
$$\xi = xt^2$$

where ξ = Dark Energy,
x = expansion,
and t = time.

$\xi > E$



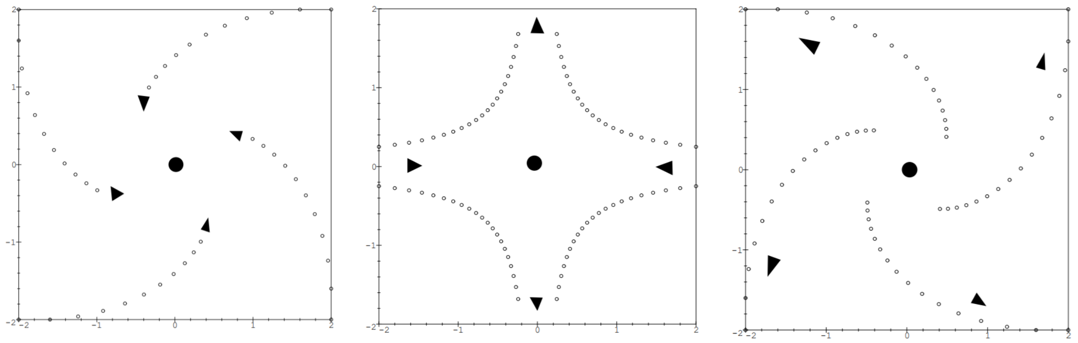
$\xi < E$



Interaction of curvature and dynamics in a two-dimensional surface

The classification of critical points, [1]

stable, *balanced,* *unstable.*

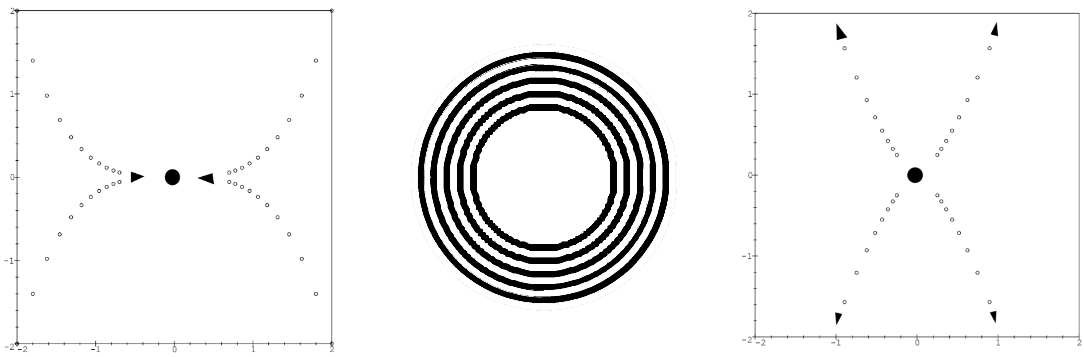


concave quantum impulse

attractive focus $E > \xi$ — $\xi_1, \xi_2 < 0$; $E_1, E_2 <> 0$

saddle node $E\xi = 0$ — $\xi_1 * \xi_2 < 0$; $E_1, E_2 = 0$

repelling focus $\xi > E$ — $\xi_1, \xi_2 > 0$; $E_1, E_2 <> 0$



convex quantum impulse

attractive node $E > \xi$ — $\xi_1, \xi_2 < 0$; $E_1, E_2 = 0$

center $E\xi = 0$ — $\xi_1, \xi_2 = 0$; $E_1, E_2 <> 0$

repelling node $\xi > E$ — $\xi_1, \xi_2 > 0$; $E_1, E_2 = 0$

where Ei, and ξi, represent the real and imaginary parts of the eigenvalue λi, i = 1,2. [2]

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[1] http://www.visual-chaos.org/jpx/book/twodim.pdf

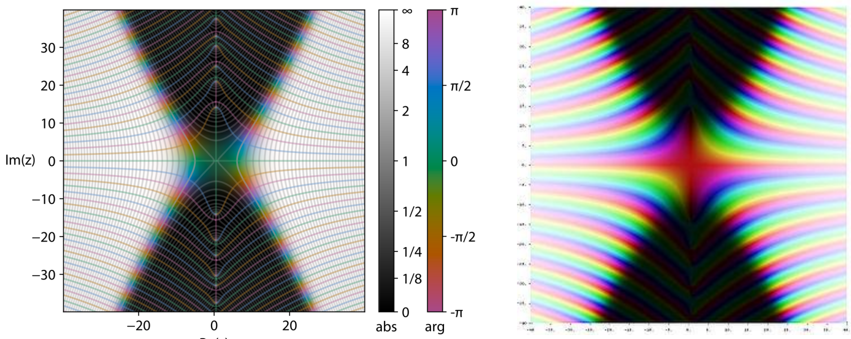
[2] https://www.researchgate.net/figure/The-classification-of-critical-points-where-R-i-and_fig1_220862224 Fig 4.

ξ(s) - nontrivial zeros of the zeta function

(*displayed in the complex plane)*

ξ(s) is used in mathematics as a symbol for Riemann's xi function. It is a variant of Riemann's zeta function. Its zeros correspond exclusively to the nontrivial zeros of the zeta function, and unlike the zeta function, the xi function is holomorphic on the whole complex plane.

$$\xi(s) = \frac{1}{2}s(s-1)\pi^{-s/2}\Gamma\left(\frac{s}{2}\right)\zeta(s)$$



[3]

The color of a point *(s*) encodes the value of the function,
hue encodes the value of the argument. Dark colors denote values closer to zero.

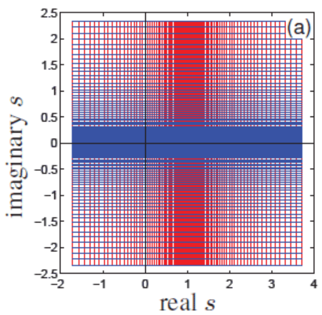
The critical linie is re(s) = 1/2

Riemann zeta function

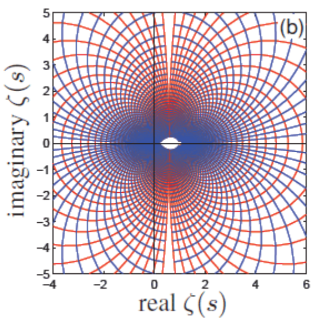
$$\zeta(s) := \sum_{n=1}^{\infty} \frac{1}{n^s} = 1 + \frac{1}{2^s} + \frac{1}{3^s} + \frac{1}{4^s} + \frac{1}{5^s} + \frac{1}{6^s} + \frac{1}{7^s} + \cdots$$

Analytical continuation

The analytic continuation of Riemann's zeta function.
Only this extension has a derivative everywhere.



[4]



[5]

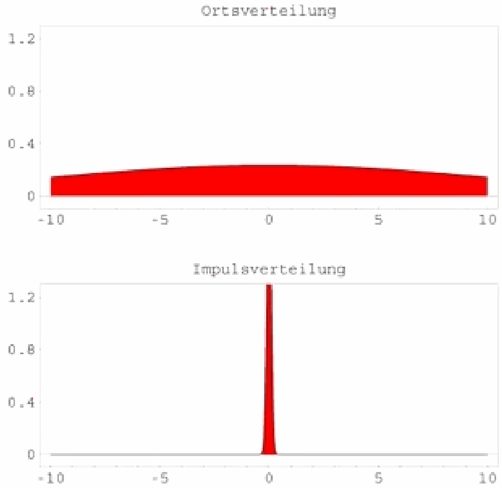
[3] https://de.wikipedia.org/wiki/Riemannsche_Xi-Funktion#/media/Datei:Complex_Riemann_Xi.jpg
[4] https://ima.org.uk/6479/urban-maths-picturing-zeta-function/
[5] https://youtu.be/sD0NjbwqlYw?t=643

Heisenberg's uncertainty principle

“Relationship between spatial distribution and impulse distribution.

The more exactly the spatial distribution (probability of location) is localized, the broader must be the distribution of the plane waves, which superpose.

So that a function, which arises from the superposition of plane waves, can have spatially abrupt changes, high impulse amounts (very short wavelengths) must play a role in the superposition.



https://gams.uni-graz.at/o:qm.4/VIDEO.6

The uncertainty of the location x and the quantum momentum i is defined by their statistical scattering σx and σi, respectively. In this case, the uncertainty principle states.

$$\Delta x \, \Delta i \geq \hbar/2$$

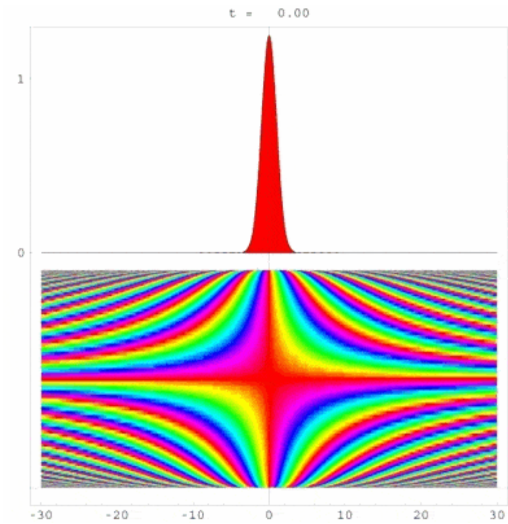
If the location of a particle is well known, the momentum is only imprecisely defined. Conversely, if the momentum is known exactly, the location is only imprecisely fixed. Even if the impulse is precisely known, the location is completely indeterminate.In this limiting case, the particle is described by a plane wave and all locations in space are equally probable.”[6]

[6] https://gams.uni-graz.at/o:qm.4

Dynamics of localized wave functions

“The movement of a wave function which is well localized at the beginning and which is composed of a large number of plane waves (below). As the plane waves move with different velocities, the shape of the superposition changes.

The "deliquescence" of the wave function (below) is an expression of the indeterminacy relation. If one superimposes plane waves with different impulses, one obtains localized residence probabilities.



https://gams.uni-graz.at/o:qm.4/VIDEO.7

Note that the plane waves with the shortest wavelength have the highest velocity, shorter wavelength means higher quantum momentum and thus greater velocity.

If the average momentum of the superposition is zero, one obtains a distribution of the probability of residence at rest on average.

Since the plane waves in the superposition have different phase velocities, the shape of the resulting wave function cannot remain constant in time. Both positive and negative momentum, and thus velocities, contribute to the localized spatial distribution. Therefore, the initial well-localized spatial distribution must gradually become broader.

In general, the movement of arbitrary wave functions is described by the Schrödinger equation. The Schrödinger equation for the movement of free particles is”

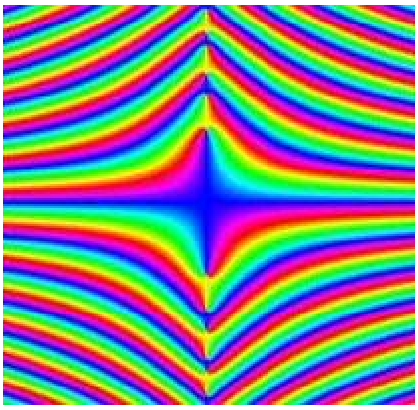
$$i\hbar \frac{\partial}{\partial t}\psi(x,t) = -\frac{\hbar^2}{2m}\frac{\partial^2}{\partial x^2}\psi(x,t)$$

[7] https://gams.uni-graz.at/o:qm.4

Color charge of particles and antiparticles

"In the description by quantum chromodynamics, the wave function of a quark has three components, denoted by the three primary colors red, green and blue, the colors of an antiquark correspond to the three anticolors (secondary colors) anti-red (cyan), antigreen (magenta) and antiblue (yellow). The color can be understood best in analogy to the spin of a particle."

"The color tone indicates the angle of the complex number.
One can see very well that on the straight line ξ(1/2+it) there are only two colors (dark blue and yellow), which represent the angles 0 and π, respectively."

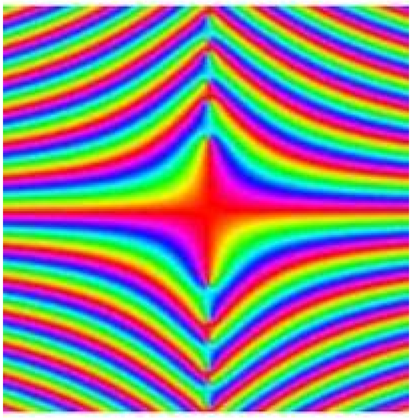


[8]

For special values of Riemann xi function, it's valid:

$$\xi(1-s) = \xi(s)$$

$$\xi(0) = \xi(1)$$



https://youtu.be/G53SJWz37Lg[9]

On the critical line ξ(1/2+it) the colors change to anticolors.

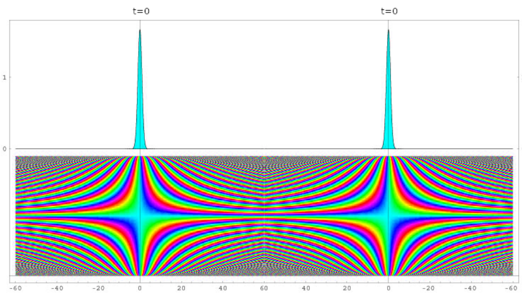
"The analogy between optical color and quantum chromodynamic color is that the three basic optical colors add up to white, an object composed of color and associated anticolor, of three colors, or of three anticolors, has no strong charge."[10]

[8] https://docplayer.org/22850502-Riemann-sche-zetafunktion.html
[9] https://youtu.be/rMScBPjr_-U?t=60
[10] https://de.wikipedia.org/wiki/Farbladung

Quantum entanglement

The localized probability of a particle (top), and the entangled quantum impulse (bottom).

Notice the spin changes from anti-particle to particle.



1. Alice misst λ_0, und der Zustand des Systems kollabiert zu $|0\rangle_A |1\rangle_B$.
2. Alice misst λ_1, und der Zustand kollabiert zu $|1\rangle_A |0\rangle_B$.

Quantum impulse collapse

Quantum impulses collapse to (t =0), when measured,
a well localized wave particle.

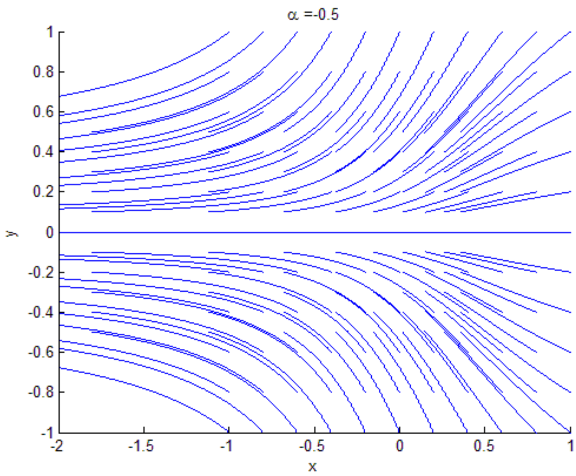
A shorter wavelength means higher momentum and therefore higher velocity.

$$\lambda = \frac{c}{f}$$

Where λ is the wavelength, c is the phase velocity, and f is the frequency.

Phase portrait showing saddle-node bifurcation. [11]

https://youtu.be/OzpqxGHMf4E



Where $\xi > E$ *is* the expansion, $\xi E = 0$ the balanced saddle-center, $\xi < E$ the attraction and a the acceleration. [12]

[11] https://en.wikipedia.org/wiki/Saddle-node_bifurcation#/media/File:Saddlenode.gif
[12] https://www.youtube.com/watch?v=XgFv4VWCP7M

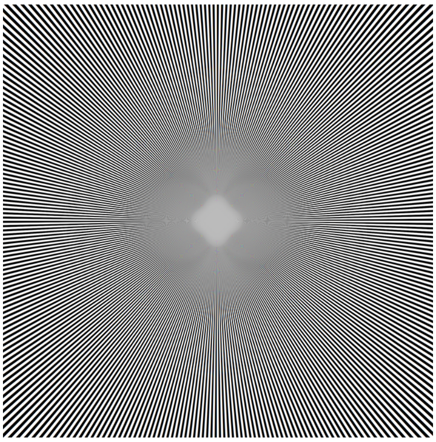
Quantum fields

The quantum impulses order in the field of the zeta functions analytical continuation.

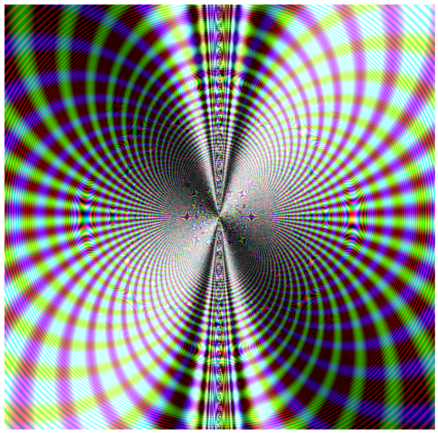
Quantum field manipulation

Dynamic linear momentum creates a quantum electrodynamic field.
Can also be affected, e.g. by the quantization rate, rotation, and the size of the field.

Observing a quantum field resonance
{ Scroll up and down and focus on the graphics }



Radial quantum field

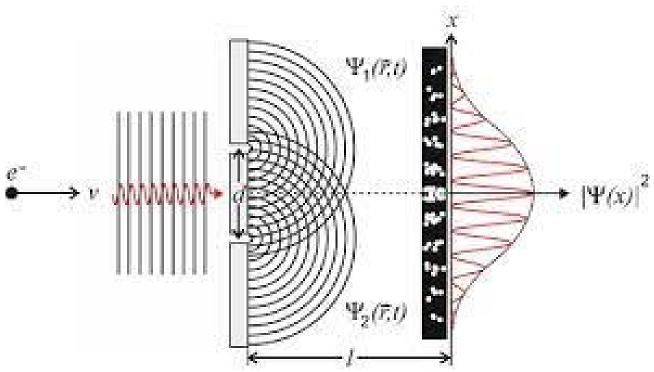


Fractal quantum field

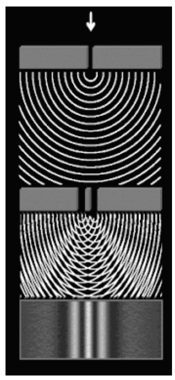
The setup used a resolution {quantization in px} of 1920x1080px on a 15,6 zoll screen.
The photon field {background light} will get quantized therefore by 2.074.000 Pixels,
with 141.2 pixels per inch, and a 0.18mm dot pitch.

The relation between the PDF size and the screen size is important.[13]

The double slit experiment



[14]



[15]

[13] https://de.wikipedia.org/wiki/Siemensstern
[14] https://link.springer.com/chapter/10.1007/978-3-662-60613-1_11
[15] http://www.steffen-grimm.de/zufallundseele/doppelspalt5.gif

Newtonian rings

"The dark rings are created by destructive interference and the light rings by constructive interference. If their phase position to each other is 180°, they cancel each other out, and dark rings are formed. If they are mutually amplified (phase position 0°), on the other hand, bright rings are produced.

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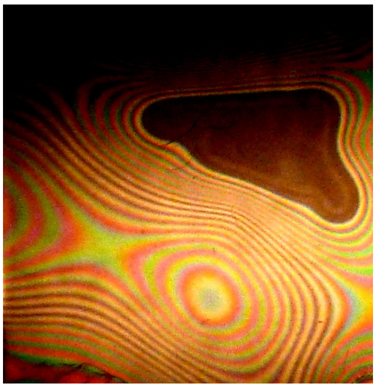

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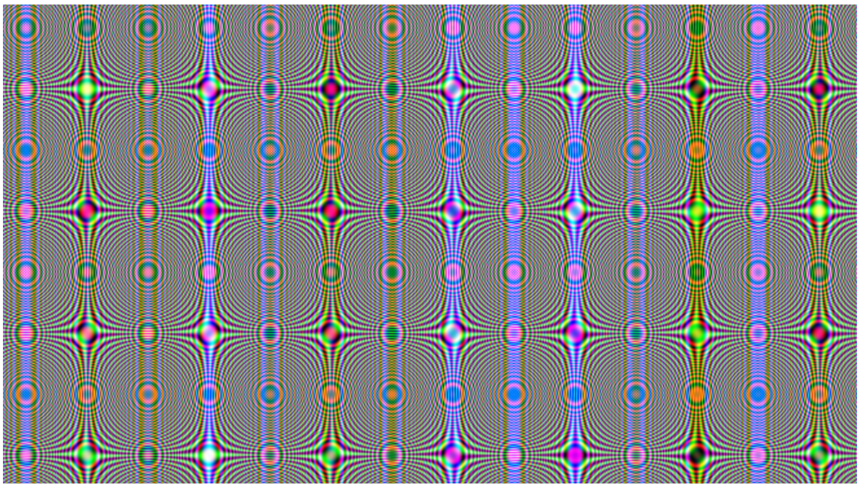
The light waves reflected at the interface during the transition from the lens into the air interfere with those reflected at the interface during the transition from the air into the glass plate."

Quantized field of convex and concave wave particles

The saddle notes interacting with center points



https://youtu.be/DOHB4TEvqzY

[16]http://wwwex.physik.uni-ulm.de/lehre/gk3a-2002/node30.html
https://medialibrary.uantwerpen.be/oldcontent/container2488/files/Presentaties/HuygensNewtonHandouts.pdf
[17]https://dccdn.de/www.doccheck.com/data/6h/ef/8j/r6/yh/ms/p1010203_lg.jpg

Quantized photon field experiment

The example setup for the measurement of a quantum impulse is:

A notebook with a display resolution of 1920x1080 on 15.6 zoll with a monochrome background picture.

A smartphone with a super amoled display with a resolution of 2960x1440, 570 pixels per inch,
It measures 148.9 x 68.1 x 8.0 mm and has an 8-megapixel camera.

Hold the smartphone camera ≈ 30 centimeters in front of the desktop screen and adjust the angle and position slowly until you see the dynamics of a saddle quantum impulse.

The exact setup isn't that important; only the exact relation to distance, resolution, position, and angle is necessary.

https://youtu.be/bLOvJCRXmXE

Dark Energy

The current preferred explanations are:

Dark energy is to be understood as the vacuum energy of "empty space" in quantum field theory. With the expansion of the universe the space increases, therefore the vacuum energy grows and accelerates the expansion.

Alternatively, dark energy is seen as the action of a time-varying scalar field called quintessence. (The fluctuations of such a field typically propagate almost at the speed of light).

Thesis

The theory describes Dark Energy as the dynamic of time, while Einstein's theory of relativity describes Energy as the curvature of space, and combines both theories into the dynamic space-time curvature. If Dark Energy can be considered physically as the dynamics of *four-dimensional space-time,* this implies that Quantum theory can be understood as the quantization of the dynamic curvature in spacetime. Therefore, mathematically, $\xi E = 0$ would be an infinite-dimensional, infinitely-manifolded, unbounded spacetime.

If you multiply anything by zero, there is a dynamic which leads to zero.

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