Zhang Xiangqian's Unified Field Theory (Concise Version)

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1. Definition of Physics:

The geometric world is our brain's primary description of objects and space, while physics is our brain's description of the motion and changes in the geometric world. The geometric world and the physical world correspond to each other.

2. Definition of a Particle:

To conveniently describe the motion of objects in space, we idealize objects by ignoring their shape and size, considering them as a point, referred to as a particle.

3. Composition of the Universe and Basic Principles of Unified Field Theory:

The universe consists of particles and the space surrounding them. There is no third entity coexisting with these. All physical phenomena are descriptions of the motion of particles and the surrounding space.

4. Definition of Matter:

Matter is composed of objects and space. Matter exists objectively and independently of our observation.

5. How Are Physical Concepts Generated?

Except for particles and space, all other physical concepts—such as displacement, time, fields, mass, charge, velocity, the speed of light, force, momentum, energy, heat, sound, color, etc.—are properties described by us as observers of the motion of particles in space and the motion of the space surrounding particles. Their essence can be represented by displacement.

6. How to Describe the Motion of Space Itself?

We divide three-dimensional space infinitely into many small parts, each called a space point. The path traveled by a moving space point is called a space line. Describing the motion of these space points allows us to describe the motion of space itself.

7. Description of the State of Motion in Physics Cannot Be Separated from the Observer:

The state of motion comes from our description as observers. It is the affirmation, denial, and re-affirmation of the position of an object in space by us as observers. Without an observer, or without specifying an observer, the state of motion does not exist, nor does a state of rest. Whether space and objects are in motion or at rest is indeterminate, and describing motion is meaningless.

8. Vertical Principle:

The physical world is a deep description of the geometric world by us as observers. Thus, any geometric state can always have a corresponding physical state. The vertical state in three-dimensional space in geometry (where a maximum of three mutually perpendicular lines can pass through a point in space) corresponds to a state of motion in physics. After our brain processes this three-dimensional vertical state, it corresponds to a state of motion in physics. Any space point (or particle) in a three-

dimensional vertical state must be in motion relative to us as observers, and its constantly changing direction and path will form another vertical state.

9. Why Is Space Three-Dimensional?
Linear motion in space forms one-dimensional space. Rotational motion on a plane forms two-dimensional space. Rotation extending perpendicularly to the rotational plane (in a cylindrical helical form) generates three-dimensional space. Relative to us as observers, space is constantly moving in a cylindrical helical form, creating three-dimensional space. The space we live in is a right-handed helix.

10. Spiral Law:
From the smallest particles like electrons and protons to large entities like Earth, the Moon, the Sun, and the Milky Way, all free particles in space move in a helical form, including space itself, which moves in a cylindrical helical form.

11. Parallel Principle:
The parallel state described in physics corresponds to the proportionality property in mathematics. Two parallel physical quantities, if represented by line segments, must be in a proportional relationship.

12. Geometric Symmetry Equals Physical Conservation:
Conservation in physics is equivalent to symmetry in geometry. A conserved physical quantity, if representable by a line segment, is line-symmetrical in geometric coordinates. If representable by an area, it is plane-symmetrical, and if representable by volume, it is three-dimensional symmetrical.

13. Space Can Store Information Infinitely:
Any space in the universe can store information infinitely, meaning it can store all the information of the entire universe for today, the past, and the future.

14. The Physical Definition of Time and the Speed of Light:
The space around any object in the universe (including our human bodies) moves in a cylindrical helical form, with a vector light speed $\vec{c}$ (the direction of the vector light speed can change, the modulus is the scalar light speed c, and c remains constant), radiating outward with the observer at the center. This motion of space gives us observers the sensation of time. The amount of time is proportional to the distance traveled by the space points around us at light speed. The speed of light reflects the unity of space and time; the essence of time is the space moving at light speed. The numerator of the speed of light—space displacement—and the denominator—time—are the same entity. If space displacement changes, time changes accordingly, so the speed of light remains constant.

15. Three-Dimensional Cylindrical Helical Spacetime Equation:
Imagine there is a particle at point o in a region of space, stationary relative to us as observers. Establish a three-dimensional Cartesian coordinate system x, y, z with point o as the origin. At the moment $t' = 0$, consider any space point p around point o, with its position represented by x_0, y_0, and z_0. The spatial displacement vector from point o to point p (called the displacement vector for short) is denoted by (r_0)□. After a time period t, at the moment t", point p reaches a new position x, y, z, with the displacement vector from point o to point p denoted by $\vec{r}$. The spacetime unification equation is:

$$\vec{r}(t) = (r_0)\square + \vec{c} \cdot t = (x_0 + x)\vec{i} + (y_0 + y)\vec{j} + (z_0 + z)\vec{k}$$

In simplified form:

$$\vec{r}(t) = \vec{c} \cdot t = x\vec{i} + y\vec{j} + z\vec{k}$$

In scalar form:

$$r^2 = c^2 \cdot t^2 = x^2 + y^2 + z^2$$

r is the magnitude of the vector $\vec{r}$.

Correspondingly, the three-dimensional helical spacetime equation is:

$$\vec{r} = (r_0)\square + \vec{c} \cdot t = (x_0 + R \cdot \cos(\omega t))\vec{i} + (y_0 + R \cdot \sin(\omega t))\vec{j} + (z_0 + h \cdot t)\vec{k}$$

16. Definition Equation of Mass and Gravitational Field:

In the Unified Field Theory, the mass m of a particle at point o represents the number of spatial displacement vectors $\vec{r} = \vec{c} \cdot t = x\vec{i} + y\vec{j} + z\vec{k}$ that are radiating outward at light speed in a cylindrical helical form within the solid angle $\Omega = 4\pi$ around point o. The equation is:

$$m = \frac{k \cdot \Delta n}{\Omega}$$

The differential form is:

$$m = \frac{k \cdot dn}{d\Omega}$$

The gravitational field $\vec{A}$ generated by point o at a space point p on a Gaussian sphere $s = 4\pi r^2$ around o is expressed by:

$$\vec{A} = -(G \cdot k \cdot \Delta n \cdot \vec{r})/(\Delta S \cdot r)$$

Where G is the gravitational constant, k is a proportionality constant, r is the magnitude of the displacement vector $\vec{r}$, and ΔS is a small part of the Gaussian sphere s, with Δn being the number.

17. Space's Motion Has Wave Properties:

$$\frac{\partial^2 \vec{r}}{\partial x^2} + \frac{\partial^2 \vec{r}}{\partial y^2} + \frac{\partial^2 \vec{r}}{\partial z^2} = \frac{\partial^2 \vec{r}}{\partial t^2} \cdot \frac{1}{c^2}.$$

$$\nabla^2 \vec{r} = \frac{\partial^2 \vec{r}}{\partial t^2} \cdot \frac{1}{c^2}.$$

$\vec{r}$ is the displacement vector from particle o to the space point p.

18. Definition of a Field:
Relative to our observers, when the displacement vector from a particle points to any point in the surrounding space and changes with spatial position or time, such a space is called a field, or more specifically, a physical force field.

Different fields represent different degrees of motion exhibited by the derivative of the spatial displacement with respect to spatial position or time. Since the essence of a field is the derivative of the displacement of space itself with respect to time and spatial position relative to our observers, we can describe how much movement exists in a certain three-dimensional space, in a certain plane, or along a certain curve. Accordingly, fields can exist in three forms:

1. The distribution of a field in three-dimensional space.
2. The distribution of a field on a two-dimensional surface.
3. The distribution of a field along a one-dimensional curve.

Gauss's divergence theorem in field theory characterizes the relationship between the distribution of a field in three-dimensional space and on a two-dimensional surface. Stokes' theorem characterizes the relationship between the distribution of a field on a two-dimensional surface and along a one-dimensional curve. The gradient theorem in field theory characterizes the relationship between the distribution of a field in three-dimensional space and along a one-dimensional curve.

19. Definition Equations of Charge and Electric Field:
In the Unified Field Theory, if a particle o carries a charge q, q represents the number of lines crossing $\vec{r} = \vec{ct} = x\hat{i} + y\hat{j} + z\hat{k}$ per unit time and per unit solid angle. In other words, the degree of change in mass m over time t is the charge. Therefore, the defining equation for charge is:
$q = k' \frac{dm}{dt} = -k'k \frac{1}{\Omega^2} \frac{d\Omega}{dt}$
where k and k' are constants. This is the differential defining equation of charge.

The geometric defining equation for the electrostatic field $\vec{E}$ generated by a stationary charge q is:
$\vec{E} = -\frac{k'k}{4\pi\epsilon_0} \frac{1}{\Omega^2} \frac{d\Omega}{dt} \frac{\vec{r}}{r^3}$

The electric field is expressed as the density of the spatial displacement $\vec{r}$ passing through a Gaussian surface s per unit time, distributed over s. Compared to the gravitational field, it includes a time factor.

20. Model of Positive and Negative Charges:
A particle carrying a positive charge generates a positive electric field around it due to the cylindrical helical motion of the surrounding space, which disperses outward at the speed of light.

A particle carrying a negative charge generates a negative electric field around it due to the cylindrical helical motion of the surrounding space, which converges towards the charged particle from infinity at the speed of light.

The space around both positive and negative charges exhibits right-handed helical motion.

21. Defining Equation of the Magnetic Field:

Imagine in an inertial reference frame s', at a point o that is stationary relative to our observers, with mass m' (when moving at velocity $\vec{v}$, the mass is m), carrying a positive charge q, an electrostatic field $\vec{E}'$ is generated at a point p in the surrounding space (the point p can be considered a spatial point, a field point, or a point of examination). The radius vector from point o to point p is $\vec{r}'$ (when moving at velocity $\vec{v}$, it is $\vec{r}$).

Using the length of $\vec{r}'$ as the radius, a Gaussian surface $s' = 4\pi r'^2$ is drawn to enclose point o.

In the inertial reference frame s, when point o moves at a constant velocity $\vec{v}$ along the x-axis, it can cause changes in the electric field in the direction perpendicular to $\vec{v}$. The varying portion can be considered the magnetic field $\vec{B}$:

$$\vec{B} = -\frac{\mu_0 k' k}{4\pi} \frac{1}{\Omega^2} \frac{d\Omega}{dt} \gamma \frac{\vec{v} \times [(x-vt)\hat{i} + y\hat{j} + z\hat{k}]}{[\gamma^2 (x-vt)^2 + y^2 + z^2]^{3/2}}$$

Using the relationship between mass and charge $q = k' \frac{dm}{dt}$, the magnetic field defining equation involving mass can be obtained:

$$\vec{B} = \frac{\mu_0 k'}{4\pi} \frac{dm}{dt} \gamma \frac{\vec{v} \times [(x-vt)\hat{i} + y\hat{j} + z\hat{k}]}{[\gamma^2 (x-vt)^2 + y^2 + z^2]^{3/2}}$$

22. Gravitational Field Varying with Time Generates Electric Field:

When point o is in motion, the relationship between the moving electric field $\vec{E}$ and the moving gravitational field $\vec{A}$ is:

$$E_x = -f \frac{\partial A_x}{\partial t}$$
$$E_y = -f \frac{\partial A_y}{\partial t}$$
$$E_z = -f \frac{\partial A_z}{\partial t}$$

The relationship between the electric field and the gravitational field is the same when the particle is stationary or moving at a constant velocity in a straight line.

23. Gravitational Field Variation from Uniformly Moving Objects Generates Electric Field:

$$\frac{\partial^2 \vec{A}}{\partial t^2} = \frac{1}{f} \vec{v} (\nabla \cdot \vec{E}) - \frac{c^2}{f} \nabla \times \vec{B}$$

where f is a constant. This equation indicates that a varying gravitational field $\vec{A}$ can generate an electric field $\vec{E}$ and a magnetic field $\vec{B}$.

24. Magnetic Vector Potential is the Gravitational Field:

The relationship between the curl of the gravitational field $\vec{A}$ and the magnetic field $\vec{B}$ is:

$$\nabla \times \vec{A} = \frac{1}{f} \vec{B}$$

25. Time-Varying Magnetic Field $\vec{B}$ Generates Vortex Electric Field $\vec{E}$ and Gravitational Vortex Field $\vec{A}$:

When the charge at point o moves along the x-axis with acceleration $-\vec{A}$ in the positive direction, the magnetic field $\vec{B}$ at any surrounding space point p changes, generating a vortex electric field $\vec{E}$ and a

gravitational vortex field $\vec{A} = \frac{d\vec{v}}{dt}$:
$\frac{d\vec{B}}{dt} = \frac{1}{c^2}\frac{d\vec{v}}{dt} \times \vec{E} + \frac{1}{c^2}\vec{v} \times \frac{d\vec{E}}{dt}$

26. Defining Equation of Nuclear Force Field:
All fields can be derived from changes in the gravitational field. The nuclear force field, like the electromagnetic field, can also be expressed through changes in the gravitational field. The electric field is generated by changes in mass within the gravitational field over time, while the nuclear force field is generated by changes in the position vector $\vec{r}$ (magnitude r) within the gravitational field over time.
The gravitational field is given by:
$A = -\frac{Gm\vec{r}}{r^3} = -\frac{Gk\vec{r}}{\Omega r^3}$
where the change in $\frac{\vec{r}}{r^3}$ over time t generates the nuclear force field:
$\vec{D} = -Gm\frac{d(\vec{r}/r^3)}{dt} = -Gm\frac{(d\vec{r}/dt - 3\vec{r}/rdr/dt)}{r^3} = -Gm\frac{(\vec{c} - 3\vec{r}/rdr/dt)}{r^3}$

In the above, $\vec{c}$ is the vector speed of light.

27. Momentum Formula in Unified Field Theory:
When an object is at rest, the surrounding space moves with the vector speed of light C, and therefore it possesses a rest momentum $P' = m'C$, with the scalar form: $p' = m'c$.

When the object is moving at velocity V, the moving momentum $P = m(C - V)$.

The scalar form is:
$P = mc\sqrt{1 - v^2/c^2} = p' = m'c$

28. Definition of Force:
Force is the degree of change in the motion state of an object in space or the motion state of the surrounding space itself.

29. Dynamics Equation in Unified Field Theory:
$F = \frac{dP}{dt} = C\frac{dm}{dt} - V\frac{dm}{dt} + m\frac{dC}{dt} - m\frac{dV}{dt}$

In this equation:

- $(C - V)\frac{dm}{dt}$ represents the mass-adding force,
- $C\frac{dm}{dt}$ represents the electric field force,
- $V\frac{dm}{dt}$ represents the magnetic field force,
- $m\frac{dV}{dt}$ represents Newton's inertial force and also gravitational force,
- $m\frac{dC}{dt}$ represents the nuclear force.

30. Definition of Energy:
Energy is the degree of motion of an object in space [relative to our observers] or the degree of motion of the surrounding space itself.

Unified Field Theory Energy Equation:
$m'c^2 = mc^2\sqrt{1 - v^2/c^2}$

Where $m'c^2$ is the rest energy at point o, and the energy of point o moving at speed v relative to us is $mc^2\sqrt{1 - v^2/c^2}$.

Here, $mc^2 - E_k = m'c^2$, where $E_k \approx \frac{1}{2}mv^2$ is the kinetic energy.

31. Photon Model:
Light is produced when a negatively charged particle accelerates, creating an anti-gravitational field that cancels out the rest mass of nearby [or itself] electrons. When the electron's rest mass disappears, it is in an excited state, stationary in space [with the space constantly moving at the speed of light] and moving at the speed of light.

The electron, under the influence of the mass-adding force $F = C\frac{dm}{dt}$ (electric field force) - $V\frac{dm}{dt}$ (magnetic field force), loses mass and enters an excited state, moving at the speed of light. Here, C is the vector speed of light, and V is the velocity of the electron.

The momentum of a moving photon is $P = mC$, where m is the photon's moving mass, and C is the vector speed of light.

The energy of a moving photon is mc^2.

One model of a photon is two excited electrons rotating around an axis while moving at the speed of light in a direction perpendicular to the plane of rotation.

Another model is a single excited electron moving in a cylindrical helical motion.

The particle nature of light is because the photon is an excited electron, while the wave nature of light is due to the photon being stationary in space and moving with the space's waves. The wave nature of light arises because of the fluctuations of space itself.

32. Principle of Alien UFO Flight:
In the universe, if you make the mass of any object become zero, that object will suddenly move at the speed of light.

33. Main Applications of Unified Field Theory:

1. Creating alien UFOs capable of flying at the speed of light.
2. Large-scale use of artificial fields for cold welding.
3. Artificial information fields that can completely cure any disease.
4. Instant disappearance and movement—Global Movement Network.
5. Large-scale global wireless power transmission.
6. Solar energy collectors.
7. Infinite compression of space to process information.
8. Space-time refrigerators.
9. Virtual buildings and virtual human bodies.
10. Field scanning to record consciousness information inside the human brain, enabling the connection between the human brain and computers.