

Query Einstein’s Explanation of the Two Experimental Results

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[Summary] A moving magnet can not drive the magnetic field. Einstein’s explanation for the phenomenon of single pole induction evades and covers up the physical essence of the matter whether or not the magnetic force lines turn when the magnet turns; Einstein had explained the experimental results of an atom clock sailing round the earth, which can’t reveal the mechanism of substance action that the atomic clocks become slow. Einstein’s explanation does not keeping with the theory of relativity that had been set up by himself — contradict the principle thus, the theory of relativity is self –contradictory. Infer a new explanation; suggest reforming the experiment; predicate a new conclusion

[Key words] magnet unable drive magnetic field electric current atomic clock run slowly the relativity contradictory

Comment on the Phenomenon of the Single Pole Induction

Shown in figure one: there is a cylinder magnet, it can conduct electricity, it’s two magnetic poles are *A* and *B*, the magnet is revolving round the axis of symmetry *AD* with a constant angular velocity; *AVB* is a conduct line and keeping static in a laboratory, one end is touched with the magnetic pole *A* and can slide, another touched with the equator of the magnet (point *B*) and can slide. The experiment expresses, there is a steady electric current passing through the return circuit *AVBCA*.

I Support for the Faraday’s Standpoint

Faraday considers that the lines of magnetic force around a magnet don’t go along with it when it turns, that is to say, the line of magnetic force keeps motionless in the laboratory, so, the magnet part *BCA* of the return circuit *AVBCA* is a moving conductor in the magnetic field, the conductor cutting the lines of magnetic force to produce a electromotive force, which result in a steady electric current passing through the return circuit *AVBCA*.

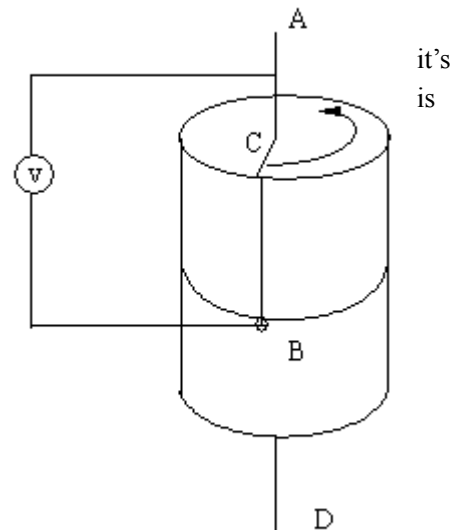


Figure one

Obviously, Faraday’s standpoint tallies with the theory and experiment that a moving magnet can’t drive the magnetic field, which have been proved by the thesis of my: “The Research about a Moving Magnet can’t Drive the Magnetic Field”.

II Oppose Weber's Standpoint

Weber's standpoint fight against Faraday's standpoint entirely, Weber considers that the lines of magnetic force go along with the turning magnet and the moving lines of magnetic force cutting the conductor AVB, which keeping motionless in the laboratory, to produce a electromotive force , which result in a steady electric current passing through AVBCA.

Obviously, Weber's standpoint is contrary to the theory and experiment that a moving magnet can't drive the magnetic field, which proved by the article of my: "The Research about a Moving Magnet can't Drive the Magnetic Field".

III Criticize Einstein's Explanation

(I) Einstein's Explanation

In 1905, Einstein wrote an article, the article used the transformation of electromagnetic field between two inertial systems to explain the phenomenon of the single pole induction.

According to Maxwell-Minkowski's electromagnetic theory, using approximation of first-order, equation of variation of electromagnetic field is

$$E = E' - \frac{1}{c} V \times B' = - \frac{1}{c} \times B' \quad (1a)$$

$$B = B' + \frac{1}{c} V \times E' = B' \quad (1b)$$

E' and B' are field quantity in reference frame K' which is a motionless to the magnet ($E' = 0$). Strictly speaking, equation (1) can only be applied in a inertial system, but when angular velocity isn't too great, rotation' impact to the electromagnetic effect can be ignored , equation (1) can be applied on condition that the magnet rotates slowly.

According to (1), in the motionless reference frame K to the laboratory, electric field exists in the conductor AVB.

$$E = - \frac{1}{c} V \times B' = - \frac{1}{c} \times B$$

Therefore, the electric current $J = \sigma E$ (Ohm's law) is produced, the electromotive force between two ends of the conductor AVB is

$$\varepsilon = - \int_{AVB} \frac{1}{c} (V \times B) \cdot dl = \frac{1}{c} \int_{AVB} B \times (r \times \Omega) \cdot dl \quad (2)$$

This electromotive force result in the steady electric current passing through the return circuit AVBCA (in equation (2), Ω is the angular velocity of magnet).

(II) Criticize Einstein's Explanation

① Criticize the process of inference

As the author see it, Einstein's explanation is only a superficial explanation, it evades and covers up the physical essential problems whether or not the lines of magnetic fore round the magnet rotates along with the magnet when the magnet rotates, and is a pure mathematical hypothesis and inference, its process doesn't disclose the corresponding mechanism of material function, and doesn't reveal the true source of producing electric current .This can't give satisfaction to a person.

In fact, Einstein's explanation supposes that E' and B' are field quantity in the conductor AVB in reference frame K' which is a motionless to the magnet ($E' = 0$), E and B are field quantity in the conductor AVB in reference frame K which is motionless to laboratory, v is the relative velocity of the reference frame K' to the reference frame K , is the relative velocity of medium to the reference frame K .

Obviously, Einstein's explanation admits that medium keeps motionless relatively to the reference frame K' and rotates relatively to the reference frame K , which means the lines of magnetic force keeps motionless relatively to the reference frame K' and rotates relatively to the reference frame K are admitted. Therefore, Einstein's explanation admitting Weber's standpoint, in fact, it can't evade and cover up the physical essential problems whether or not the lines of magnetic force round the magnet rotates along with the magnet when the magnet rotates; Einstein's explanation admits Weber's standpoint and at the same time he supposes $E' = 0$, it is self-contradictory.

② Criticize the result of inference

According to Einstein's result of inference: seeing from the reference frame K' , $E' = 0$ in the conductor AVB , there is not electric current passing through the return circuit $AVBCA$; If a light bulb is joined to the return circuit

$AVBCA$, the light bulb will not give out light. Seeing from the reference frame K , $E = -\frac{1}{c}V \times B$ in the

conductor AVB , there is electric current $J = \sigma E$ passing through the return circuit $AVBCA$; If a light bulb is joined to the return circuit $AVBCA$, the light bulb will give out light.

In the same laboratory, a observer who keeps motionless relatively to the reference frame K' can't see the light bulb to give out light, but a observer who keeps motionless relatively to the reference frame K can see the light bulb to give out light, this doesn't conform to the fact. Obviously, Einstein's explanation is self-contradictory to his theory of relativity — it is self-contradictory to the principle of relativity.

Query Einstein's Explanation about the Experimental Result of an Atom

Clock Sailing Round the Earth

Within the acceptable experimental error, the experimental result of a atom clock sailing round the earth is considered comforting to the prediction data of the relativity's effect of expansion of time (in fact, the error is huge). But, only in the inertial system which is relatively static to the earth's axis, this effect can give out right prediction, as in other reference frame, the effect can't give out right prediction. Therefore, theory of relativity is full of contradictions.

I The Explanation of the Relativity of Narrow Sense

Shown in figure two: according to the effect of expansion of time of the relativity of narrow sense and the effect of red movement of the generalized relativity, what the total effect predicts is

$$\Delta \tau = \int (d\tau - d\tau_0) = \int \left[\frac{gh}{c^2} - \frac{1}{2c^2} (v^2 + 2\Omega Rv \cos\phi \cos\theta) \right] d\tau_0 \quad (3)$$

On the right side, the first term is the contribution of gravitation, which is always positive, so, the atomic clock on the ground is slower than the atomic clock in the air; the second term and third term are kinematical effects. Positive and negative characteristics of the third term depends on the direction of flying velocity: If a atomic clock flies toward east, this term is negative; If a atomic clock flies toward west, this term is positive.

In 1971, Hafele and Keating completed this experiment, within the acceptable experimental error, these results conforms to the value of prediction of equation (3) (check in table one).

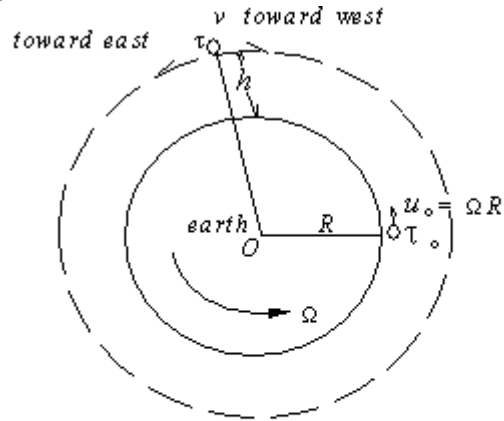


Figure two the atomic clock τ sails relatively to the ground toward east(or west)with v in the sky that the altitude is h ;the atomic clock τ is motionless on the ground, the earth revolves with angle velocity Ω in the static reference frame K

II Query Einstein's Explanation

(I) The logic error of Einstein's explanation

On the right of the formula (3), whether or not the third term is positive depends on the direction of flying velocity: If a atomic clock flies toward east, this term is negative; If a atomic clock flies toward west, this term is positive. The velocity of the flying atomic clock isn't relative, the atomic clock doing circular motion becomes slow in the inertial system which is relative static to the earth's axis, the bigger the tangential velocity is, the slower the atomic clock moves; Especially, when two atomic clocks flies separately with equal size of velocities and on opposite direction in same circumferential orbit. The two atomic clocks have relative motion, but their reads same when they meet again.

Table one Comparison between the Experimental Result of the Atomic Clock Sailing round the Earth and the Theoretical Prediction

		$\Delta \tau$ (The reading of the flying atomic clocks minus the reading of the atomic clock on the ground ,unit is 10^{-9} second)	
Experimental result	Number	120	
	of four	361	
	atomic	408	
	clocks	447	
	average number	-59 ± 10	$+273 \pm 7$
Value of prediction of equation(3)	effect of gravitation	144 ± 14	179 ± 18
	effect of kinematics	-184 ± 18	96 ± 10
	total net effect	-40 ± 23	275 ± 21

In a word , in Einstein's explanation, we must distinguish between the flying of toward east and west — In the

reference frame K is relatively static to the earth's axis , when the airplane flies toward east , the atomic clock in the airplane is slower than the atomic clock on the ground; When the airplane flies toward west, the atomic clock in the airplane is faster than the atomic clock on the ground. Obviously, Einstein's explanation must distinguish between two kinds of inertial systems, the one keep relatively motionless to earth's axle and the one keep relatively motion to the earth's axle, this is self-contradictory to the principle of relativity. This exposes the contradiction of the theory of relativity . Therefore, the experimental result of an atomic clock sailing round the earth can't prove that the theory of relativity is right, on the opposite ; the experimental result proves that the theory of relativity is wrong.

(II) The essential defect of Einstein's explanation

Einstein's explanation is only a pure mathematical hypothesis and inference, it doesn't disclose the true cause that why the atomic clock becomes slow or quick — It doesn't disclose the mechanism of material function that a atomic clock becomes slow or quick. For example, your watch becomes slow or quick, which can't be explained to be that the time becomes slow or quick.

III Infer a New Explanation

Einstein's explanation doesn't disclose the mechanism of material function that why a atomic clock becomes slow or quick, in the experiment, the atomic clocks become slow only if the clock flies relatively to the relative static inertial system to the earth's axle; According to the thesis of my: "The Research about a Moving Magnet can't Drive the Magnetic Field", the geomagnetic field doesn't turns round its axle .Therefore, It is a effect of the function of geomagnetic field that the atomic clock's sailing round the earth become slow in the relative static reference frame K to the earth's axle — Moving in the geomagnetic field ,the atomic clocks become slow ,which is the effect of kinematics; The intensity of geomagnetic field changes along with the altitude, which produces "contribution of gravitation".

In order to test the above – mentioned inference, the author suggest appending a magnetic field by the side of the atomic clock, make the direction of the additional magnetic field and the direction of the geomagnetic field to be identical or opposite (when their direction are opposite, make the additional magnetic field counteract the geomagnetic field exactly), do this experiment again, we can get a new result.

We can do a similar experiment in a laboratory, that is to say, laying a atomic clock in a magnetic field, then observe whether or not the atomic clock goes slow, and can study further the relations between the rate of the atomic clock and the intensity of the additional magnetic field.

Moreover ,the author suggest do an experiment that a atomic clock sails separately towards the south magnetic pole and the north magnetic pole round the earth in order to discover the true source that the atomic clock becomes slow or quick .

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[A Brief Introduction of the Author] A male senior instructor, who was born in February 1963, has been studying the theory of relativity since 1980, and find out some problems of the experimental basis and mathematical logic of the theory of relativity. And

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is Untenable to Michelson's Experiment; Restore the Hypothesis "Ether" to Explain the Two Different Types of Dual Property of Wave and Particle from Different Sources; Restore the Hypothesis "Ether" to Establish a Model of the Magnetic Field; The Research about a Moving Magnet can't Drive the Magnetic Field; Query Einstein's Explanation of Two Experimental Results; Substance Analysis. I was awarded the Challenge Prize of Relativity by Beijing Relativity Theory Research Federation, Hoff Lu Research Institute of Matter Regularity, Editorial Committee of Matter Regularity in December in 2008.

