

## About the moving gravitational field

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Gravity Engineering Corporation  
CEO Takashi Tsuda

### **1. Introduction**

The law of gravitation of Newton is a law about a stationary gravitational field, and a law of the gravitational field currently moved does not exist sensibly generally. Although I have already announced as a book about ten years ago in fact, generally it is hardly known. There is no star of the universe at which it has stopped. It is because it will be drawn in the gravity of other stars and will be merged, if it has stopped.

The star currently moved will make the gravitational field currently moved. It becomes a quite severe situation that there is no law of what kind of influence the gravitational field currently moved in this way has on the surroundings, when observing the universe currently moved. The theory which can consider the gravitational field currently moved for expressing the state of such the universe is required.

I will start with consideration of the orbit of the object which approaches a gravitational field first of all.

### **2. The orbit of the object close to the gravitational field which is not rotated**

The gravity of the planet  $M$  presupposes that the asteroid  $m$  approaches at the initial velocity  $v$  from the distant place which can almost be disregarded towards the center of the planet  $M$  which is not rotating. (Fig. 2.1)

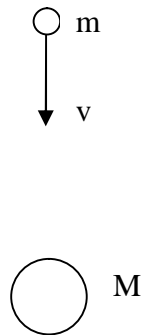


Fig. 2.1 Object close to gravitational field which is not rotated

At this time, the asteroid  $m$  is understood that it will collide with the center of the planet  $M$  from the law of gravitation.

### 3. The orbit of the object close to a revolving gravitational field

On the other hand, if the asteroid  $m$  approaches at the initial velocity  $v$ , what kind of orbit does the asteroid  $m$  become from the distant place which the gravity of the planet  $M$  can almost disregard towards the center of the revolving planet  $M$ ?

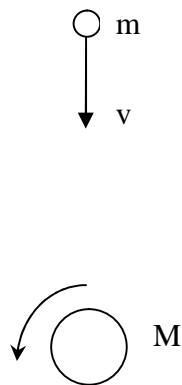


Fig. 3.1 Object close to revolving gravitational field

The mass of the planet  $M$  is small, or if revolving speed is slow, it will become the same as the case where the planet  $M$  is not rotating approximately, but it is doubtful whether the mass of the planet  $M$  is large or if revolving speed is quick, the approximation consider that is not rotating is possible. What orbit does it become correctly?

Does this become calculable if the general theory of relativity is used? Although the general theory of relativity drops an elevator and it tries to get to know change of the space by gravity on that occasion on the orbit of the light in it, it is dependent on the law of gravitation how an elevator falls. Although the general theory of relativity changes the measure of space with gravity, carrying out is coordinate conversion which expresses the result of the law of gravitation by the complicated coordinate system from which a measure changes. If the gravitational field which the law of gravitation is moving cannot be treated, it will be said that it cannot treat by the general theory of relativity, either.

#### 4. The direction of gravity

If an object is dropped from the watcher who is present in the surface of the earth which rotates, for example if it observes from the rotating coordinate system and movement is observed, gravity will be observed as power committed from the circumference as a straight line to the center of the axis of rotation. (Fig. 4.1)

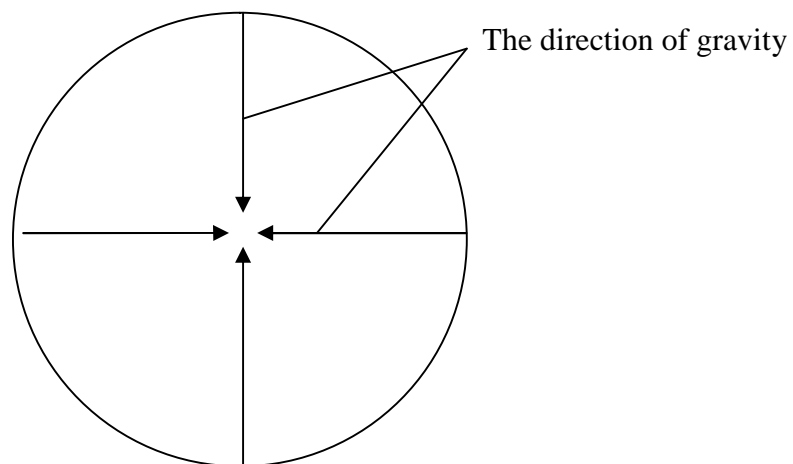


Fig. 4.1 Direction of gravity observed from rotating coordinate system

Galileo said that a heavy object and a light object fell with the same speed. The object which mass has infinitely near 0 also falls on the same orbit. This means falling on the orbit same as what does not have mass like light. Although it is considered as verification of the general theory of relativity as the gravitational lens effect that light was bent with gravity, the interpretation that it was only confirmed that the law of the

falling object of Galileo can apply also to light and that it is also realized. I hear that it accelerates that light is bent by the gravitational field in the direction of the source of a gravitational field, and it is. When emitting light from the elevator which carries out free fall downward at the velocity of light  $C$ , the velocity of light  $C$  must be exceeded. The idea is impossible that the space length is 0. For example, light is accelerated even in a gravitational field like the gravitational field of the earth which is not so large. The speed of the light on the earth is not 0, but is almost  $C$ .

The influence of centrifugal force cannot be disregarded in a revolving coordinate system. Centrifugal force is a surface from which the law of inertia or the law of quantity-of-motion preservation appear at the time of curvilinear motion. Quantity of motion or kinetic energy  $\text{Mass} \times \text{speed}$  Being, the size is proportional to mass. If mass is infinitely close to 0, quantity of motion and kinetic energy will also be set to 0. If kinetic energy becomes zero, centrifugal force will not arise, either.

That is, if it is the very light thing that the mass of the object to drop is infinitely close to 0, the influence of centrifugal force can be disregarded. The influence of the kinetic energy of the object before making it fall can be disregarded, and can observe only the influence of gravity.

The direction of the gravity observed from the rotating coordinate system is going to the center of the axis of rotation.

Suppose that it observes from a coordinate system which was fixed to the sun which is not rotating to the earth on the other hand, and drops the object  $M$  from an  $A$  point of the gravitational field on the rotating planet. While the object  $M$  reaches on the surface of a planet, it is  $1/4$ . It rotates, then the object  $M$  reaches  $B$  point from  $A$  point on a spiral orbit. The direction of the gravity observed from the non-rotating coordinate system is spiral. (Fig. 4.2)

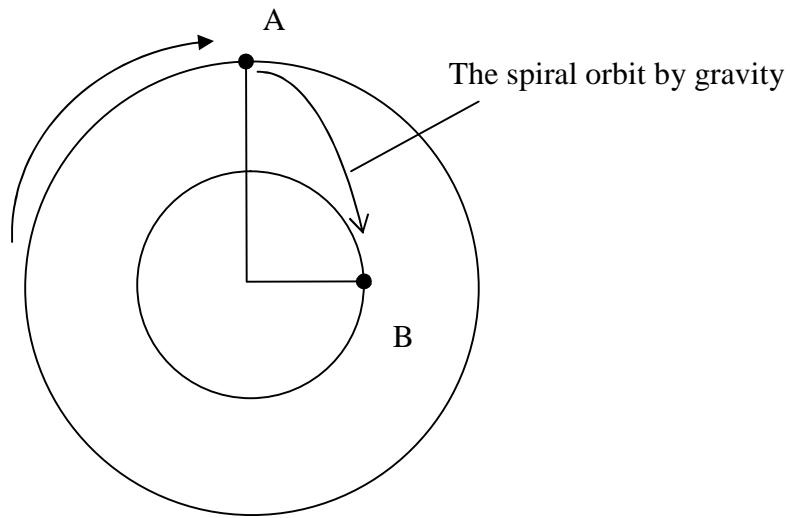


Fig. 4.2 Direction of gravity observed from non-rotating frame system

If mass of the object  $M$  is made very light which is infinitely small to 0, the influence of quantity of motion which assimilated to rotation of a planet and was moving can be disregarded. The spiral orbit acquired here is based only on the effect of gravity.

A conclusively revolving planet makes an around revolving gravitational field.

The orbit regarded as the planet not rotating the orbit of the object which motion the inside of the revolving gravitational field, and the circular orbit by rotation of a planet are compounded.

Although it was said that the object in which the law of gravitation of Newton had two mass close to each other, after the concept of a field is introduced, two objects are not close to each other and it is thought that it accelerates according to the inclination of the gravity on space. According to this idea, a thing without mass will also be accelerated. Although a picture in which coordinates were dented in distribution of gravity is often seen in description of the general theory of relativity, the same picture can be drawn if it draws like the contour line of the size of a gravitational field instead of denting coordinates. If the measure of the coordinates which should be a standard is partially changeable, in order to draw the picture which becomes very complicated, and dents the coordinates, the data of the contour line of the gravitational field of Newtonian mechanics is required. The general theory of relativity seems to carry out superfluously complicated conversion. It seems that it is that what is necessary is just to consider ordinarily that the space itself is that are not shrunk but it is shrunk that the density of

the substance in space becomes high with gravity.

## 5. The gravitational field of the object which carries out linear uniform motion

It can be considered the object close to the gravitational field also turning around the orbit of the object close to the gravitational field which is carrying out linear uniform motion the same way. What is necessary is just to compound the orbit observed from the coordinate system stationary to the object which carries out linear uniform motion to the orbit observed by the coordinate system installed in the object which carries out linear uniform motion.

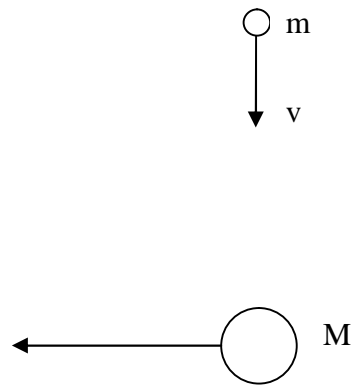


Fig. 5.1 Object close to gravitational field which is carrying out linear uniform motion

If light is emitted towards a direction of movement from the train which carries out linear uniform motion at the speed  $V$  to the earth and it will observe from the coordinate system fixed to the earth, the speed of light will be set to  $C+V$  and the speed of the light of the counter direction of a direction of movement will be set to  $C - V$ . Speed is  $C$  wherever it may turn light to, if it observes from the coordinate system fixed in the train. It is because a train is the gravitational field currently moved.

The special theory of relativity should have been considered in this way. Then, probably, a beautiful theory of natural extension of the Newtonian mechanics of the gravitational field currently moved was obtained.

If time is timed on the basis of the speed of light, the idea that the distance which light followed is proportional to lapsed time is not mistaken. It is also right that time progresses slowly in the shrunk space. However, it is a measure of local time, and

simultaneity is maintained even if measures differ. Although the light which was observed out of the train like the special theory of relativity, and was emitted from the center of a train arrives at the both ends of a train simultaneously, it should be simultaneous if it observes from a station.

Although gravity appears in the general theory of relativity, gravity is not taken into consideration at all in the special theory of relativity. There are many methods of proving that the special theory of relativity is an error, since it is not much constructive, it does not state here. The method of recognizing that it was an error is thinking over again. Since the gravitational field currently moved by the theory of relativity cannot be treated although it is individual freedom if you would like to still believe the theory of relativity, the theory of the gravitational field currently moved is added.

What is necessary is just to use the tool which is more useful and can be used, since whose mathematics or physics are / like a tool.

## **6. Conclusion**

Although having stated by this document was the long introduction before explaining the theory of the gravitational field currently moved, the conclusion that the object which is moving made the gravitational field currently moved to the circumference was obtained. Although this is what is natural, it is the law which was not before.

Although there is a magnetic field, a magnetic field produces by the electric field which is moving, and the law of a magnetic field is a law of the electric field which is moving. The equation of the gravitational field currently moved turns into form similar to the equation of Maxwell of electric magnetic.

I will draw the equation of the gravitational field next time. Although it has been made not to dare to use expression so that he can understand even in the more general one without mathematical knowledge until now, it is impossible not to use expression to draw an equation. If expression begins to be used, a threshold will become high suddenly. It seems that he cannot understand the more general one without the mathematical knowledge from next time. If it compares to systems development, it is a thing like a design process until now, and goes into the coding process after this. Since it is most that the customer does not have the knowledge of coding, even if it talks a customer about a coding level suddenly, the customer cannot understand. Also as for the

knowledge of physics, it is desirable that it is a knowledge system which can be understood not only to the knowledge of a coding level but to the more general one. It does not describe only a result but a reason understands it. I am still wishing a long time ago also, if I want physics to be existence like the symbol of human-beings civilization.