

## STABLE ORBIT IN THIRD MODEL OF UNIVERSE

By Karel Havel

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Newton's Law of Gravitation teaches that all bodies in the Universe attract one another by gravitational forces that travel at infinite speed. Newton does not explain *how* the bodies know in which direction to attract one another. Common sense tells us that, on the basis of Newton's Law of Gravitation, all bodies in the Universe must rapidly crash together. Yet, the observations suggest the opposite: the Universe seems to be expanding. To explain why it is so, the scientists proposed two distinct models of the Universe.

The first model of the Universe is called the Steady State. It teaches that new matter is being continuously created, at a rather slow rate, causing the Universe to slowly expand.

The second model of the Universe is the Big Bang Theory, which teaches that nearly 15 billion years ago all matter in the Universe was compressed into extremely hot and dense entity called the Cosmic Egg or Primeval Atom. Then it suddenly blew up in a monstrous explosion, called the Big Bang. While moving away at enormous speed, the uncorked disheveled particles rapidly assembled into atoms, which eventually organized into galaxies, which today still move apart, although being slowed down by the combined gravitation of other galaxies.

The scientists unanimously agree that they cannot find any other theory, based on the normal physical ideas, that would explain the behavior of the Universe as observed.

The third model of the Universe was proposed in [1] and has been so far completely overlooked by scientists. It teaches that gravitation is carried at a finite speed by large numbers of carriers of gravitation that are emitted by all atoms and sub-atomic matter within the emitting body. The gravitation is conveyed to the receiving body by repeated hits by the carriers on the atoms within. In response to the hits, all atoms, and therefore the entire receiving body, are accelerated against the direction of the carriers.

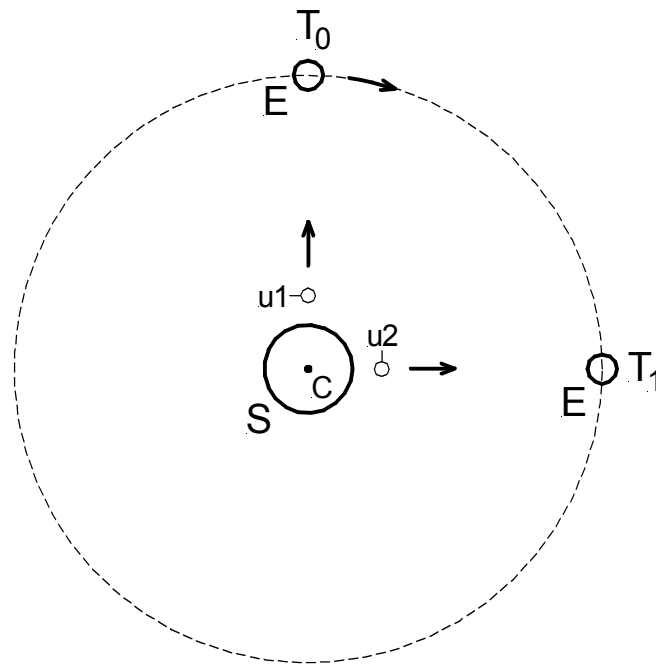
After being emitted, the carriers of gravitation move in straight lines away from the emitting body. However, the carriers travel at a finite speed. Since the emitting body moves after the emission, some time later the carriers may appear as if they travel away from an empty space (where the emitting body was at the moment of emission). And since the receiving body is accelerated against the direction of the carriers, it is possible that the receiving body may be accelerated toward a point in empty space (where the emitting body used to be), and not toward the emitting body in its present position.

When we consider vast distances in space, the emitting body may travel very far before the carriers of gravitation that were emitted therefrom reach the receiving body. In some cases, the emitting body travels so far that the receiving body is accelerated in the direction away from the present position of the emitting body. That may explain why all bodies in the Universe do not crash, why some galaxies recede from one another, and others collide.

Careless reader or inexperienced thinker may conclude from the foregoing that *all* orbits in the third model of the Universe would be long-term unstable. That would contradict our experience. We happen to know that the orbit of our planet Earth about the Sun is very stable and has been such for billions of years.

Fortunately, there is an explanation for that. While it is indeed true that *most* orbits in the third model of the Universe are long-term unstable, there exists one long-term perfectly stable orbit which will be now disclosed.

Consider the head-on view of exemplary orbit illustrated in Figure 1, in which stationary body *S* (Sun) is orbited in a circle by body *E* (Earth), as indicated by the arrow. The dimensions of the bodies and the distances are not to scale and are exaggerated for clarity. For simplicity, the directions and positions will be described as seen in Figure 1 (e. g., ‘up’, ‘right’, ‘clockwise’, ‘12 o’clock’, ‘3 o’clock’, etc.).



**Figure 1**  
**Stable Orbit**

By referring to Figure 1, body *S* keeps continuously emitting enormous numbers of carriers of gravitation in all directions in three dimensions (not shown). Even though the carriers are emitted from the surface of body *S*, it is mathematically advantageous to imagine that all carriers are emitted from its center *C*.

At time  $T_0$ , body *E* is in the position at the top of the circle (‘12 o’clock’). At that moment, an exemplary carrier of gravitation *u1*, indicated by a small circle, is emitted in the direction ‘up’, as indicated by the arrow, aimed at body *E*. Carrier *u1* travels at a very high finite speed; body *E* moves much slower along the circle. When carrier *u1* reaches at time  $T_1$  the position at the top of the circle (‘12 o’clock’), where body *E* was located at time  $T_0$ , body *E* moved to its new position (‘3 o’clock’) at time  $T_1$ . Thus carrier *u1* completely missed body *E*, even though it was aimed at its original position.

At time  $T_0$  is also emitted another exemplary carrier of gravitation *u2* in the direction ‘right’, as indicated by the arrow, even though there is nothing in that direction at the moment. However, while carrier *u2* flies in space in a straight line, body *E* travels along the circle on a collision course. At time  $T_1$  body *E* arrives to its position as illustrated (‘3 o’clock’), where it is hit by carrier *u2*. It is just an accident, because carrier *u2* was aimed at an empty space.

In response to the hit by carrier  $u_2$ , and by large numbers of other like carriers (not shown), body  $E$  is accelerated against the direction of all such carriers. Since all carriers originated from center  $C$  of body  $S$  that did not move, and since all carriers traveled in straight lines, body  $E$  is always accelerated by gravitation toward center  $C$ . Since body  $E$  travels in a circle, its distance from center  $C$  is constant, which means that its acceleration by gravitation toward that point is also constant. Body  $E$  therefore continues to orbit in a circle; such orbit is perfectly long-term stable.

Now let us move body  $S$  in a straight line in the direction perpendicular to the illustrated plane of orbit (toward the reader). Obviously, since we are now dealing with three dimensions, the term 'plane of orbit' should be interpreted rather loosely. The trajectory of body  $S$  is a straight line, by definition. Body  $E$  also moves in the same direction, while orbiting body  $S$ . The trajectory of body  $E$  is therefore a helical cylindrical spiral, having as its axis the straight-line trajectory of body  $S$ .

We can now place the origin of a movable frame of observation at center  $C$ . In such frame of observation, body  $E$  orbits body  $S$  in a circle. The distance of body  $E$  from body  $S$  is constant at all times. That causes the acceleration by gravitation of body  $E$  toward center  $C$  to be constant. As a result, body  $E$  continues to orbit in a circle in the movable frame of observation (but in a spiral in practice). Such orbit is perfectly long-term stable.

The third model of the Universe contemplates that the theoretical orbit just described is substantially the orbit of our Earth about the Sun. It is also substantially the orbit of Venus about the Sun or Mars about the Sun. All these orbits are very close to circles. The trajectory of the Sun about the center of the Milky Way is long and curved; however, within certain limits it can be substituted by a straight line. This explains why the orbits of the Earth, Venus, and Mars are long-term stable. Other orbits are long-term unstable.

Generally, the development of life requires, among others, favorable and long-term stable environment. That can be astronomically translated into a planet having a long-term stable orbit at a suitable distance from its Sun. Since, in the third model of the Universe, most orbits are unstable, and the long-term stable orbit is extremely rare, we now have a theoretical justification why life did develop on the Earth, and why so far it was not detected on any other planet. Is it not nice when everything clicks into picture?

In summary, the third model of the Universe is based on normal physical ideas, logic, and common sense. It explains the observed behavior of the Universe without resorting to any exotic and improbable speculations. It should therefore be taken seriously.

[1] Havel, Karel. *Gravitation: Master Key to the Universe: the Greatest Mystery of Science is Solved*. Brampton: Grevy Press, 2003.

Karel Havel is a retired professional engineer who was awarded over 100 patents worldwide. He is the author of book *Gravitation: Master Key to the Universe* (ISBN 0-9689120-0-1), in which is disclosed a radical new theory of gravitation that proposes a 'third' model of the Universe.

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