

Gravifugal Force

Petar Bosnic on Reactionless Propulsion

By Tim Ventura & Dr. Petar Bosnic, January 25th, 2006

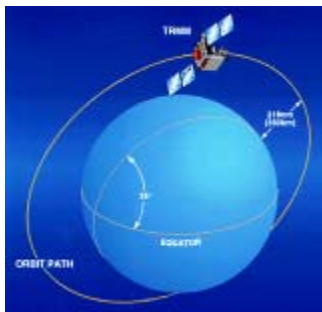
If satellites were motionless, they would rapidly plummet to Earth - but they don't because of a magic ratio between forward velocity and the rate at which they fall, giving them a stable orbit at any altitude. This concept captivated Professor Petar Bosnic, leading him to a simple question: could a rapidly rotating ring create lift in the same manner that a satellite remains in free-fall? He joins us to talk about his vision for a new propulsion from the concept of "Gravifugal Force"...

AAG: Let's begin with your background: can you tell us a bit about your background & education, and how you first got involved with BPP research?

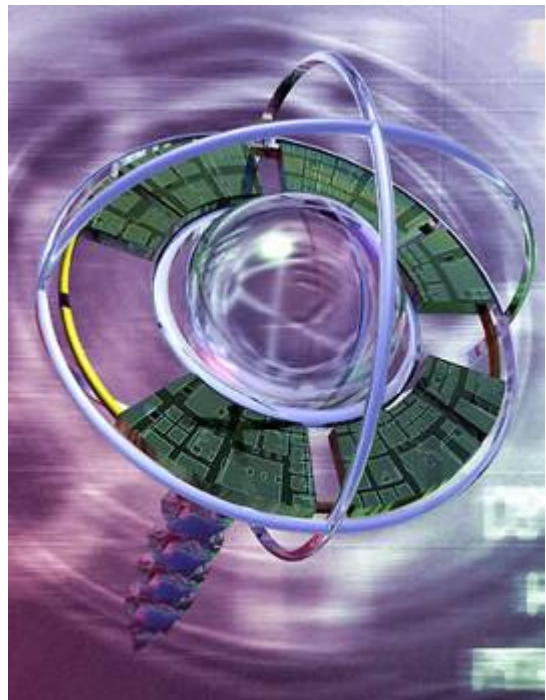
Bosnic: Well, I'm a professor of philosophy and art history, but from an early age, mathematics and physics were my hobby. In 1968 I started to experiment with levitation devices. It was during 1975 that I got the first affirmative results in the laboratories of "Tehnoloski fakultet" - University of Zagreb. At the time, though, I couldn't explain the results, and I temporary stopped conducting my research. In 1982 I discovered the "double curved trajectory of a ring mass rotating in a gravitational field", and made calculations based on a hypothesis of gravifugal force that explained my experimental results. After I completed developing the theory I had no further theoretical or technological problems.

AAG: Now on your website, you clearly state your belief that "Antigravity does not exist" -- but you're proposing another effect to accomplish a reactionless thrust. Can you tell us about "Gravifugal Force"?

Bosnic: I'm educated in relativity and quantum physics and other fields, but I do not see the place of antigravity. Maybe it is good luck, because such a force would likely decrease proportionally to the radius squared of the distance from Earth's center. Gravifugal force decreases linearly, which makes it much more powerful and suitable for propulsion than this hypothetical antigravity force would be. It's good luck that I pursued the research that I did...



Free Fall: Satellites in orbit are always falling.



Flying Ring: Could Bosnic's Gravifugal Force lead to the development of giant ring-craft?

Hypothetically, Antigravity "should be" one of fundamental forces. In contrast, gravifugal force is just a reaction to action of gravipetal force. Gravipetal force is a gravity functioning as a centripetal force. Astronauts and him spaceships e.g. are subjected to the gravipetal force, which continuously bends their trajectory into circular shape. The reactionary force is "gravifugal", which allows the levitation of astronauts and their spacecraft.

AAG: It appears that you're working from a Newtonian Physics playbook in your derivations. Have you investigated hyper- and multidimensional models of spin such as Torsion Physics?

Bosnic: Yes, but I haven't published the results of my research into Torsion Physics -- making it public just isn't a high priority for me at the moment. Tesla also conducted research in this area. The value of torsion effects in gravitational and magnetic fields are very small, but it's possible to detect Torsion fields over very long distances.

The connection between force & rotation was detected a long time ago in the Earth's rotation and measured by a gravimeter with a very high degree of accuracy. Unfortunately it was erroneously regarded as a derivative of geocentrifugal force. Actually, geocentrifugal force is a derivative of gravifugal force.

AAG: One force that you stress in particular is the "axilongal force", acting along the axis of a rotating body. Are you saying that a rotating object can experience an upward or downward thrust along the axis of rotation resulting from the energy of spin itself?

Bosnic: Axilongal force appears in rotation within a gravitational field. A solid body rotating doesn't cause axilongal force because of the principle of symmetry. (see figure 1)

This force is a derivative of gravifugal force and direct cause of levitation. I am very glad to say that it was proved by falling down of spinning gyroscopes, but in the lack of gravifugal force theory it was not possible to explain the results. So, unfortunately achieved small values were regarded as measurement errors. The clearest results were achieved by Dr. Hideo Hayasaka.

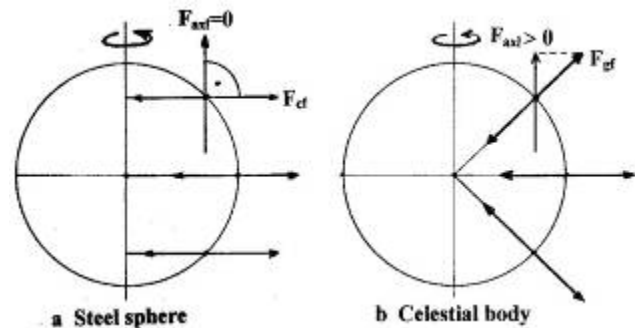


Figure 1: The resulting forces in the rotation of a steel sphere, and the forces a celestial body.

AAG: Thus far, your work seems firmly rooted in Newtonian Physics, and most of the Antigravity research that I've seen is from relativity or Unified Field & Torsion Physics. Is it fair to say that "Antigravity doesn't exist" really applies more to your model than to physics itself?

Bosnic: Maybe your objection is correct, but I remain satisfied that gravifugal force is still a much more powerful and suitable than I believe antigravity would be. However, sometimes I feel frustrated at the realization of just how simple the model of gravifugal force is, and wish that more people could accept it on its many merits. Remember, the experimental evidence for gravifugal force was found long ago, and my primary contribution rests only in determining the correct model to explain the existing evidence. In my case, the discovery leads to the concept of the double curved trajectory of a rotating ring mass – but this concept is very important. It's possible that it's even more important than the spherical geometry of Riemann and Lobachevskij.

AAG: OK, so let's talk propulsion: you've written about asking the reader to imagine a rotating ring sitting above a ball, which has a double-curved trajectory of the ring mass. This seems to involve an aspect of your actual propulsion concept, so can I ask you to elaborate on this a bit?

Bosnic: Let me correct a misperception – the "ball" you're referring to is in fact the Earth, but the specific graphic you mentioned online contains inadequate proportions between the Earth and ring. The trajectory of the rotating ring mass is simultaneously curved to the center of ring and the center of gravity of Earth – the point of application for gravipetal force. Figure 8 below contains an explanation for this based in Euclidean geometry. (see figure 2)

AAG: From a layman's perspective, the moment that I saw the schematic of a ring rotating above a ball, it struck me that you were suggesting that if the ring rotates faster than its escape-velocity that it won't fall for the same reasons a satellite stays in orbit...in other words, a ground-level free-fall. Is this accurate, or am I way off base?

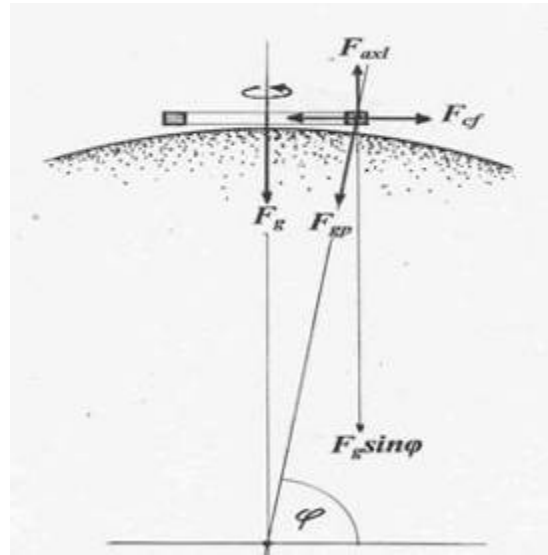
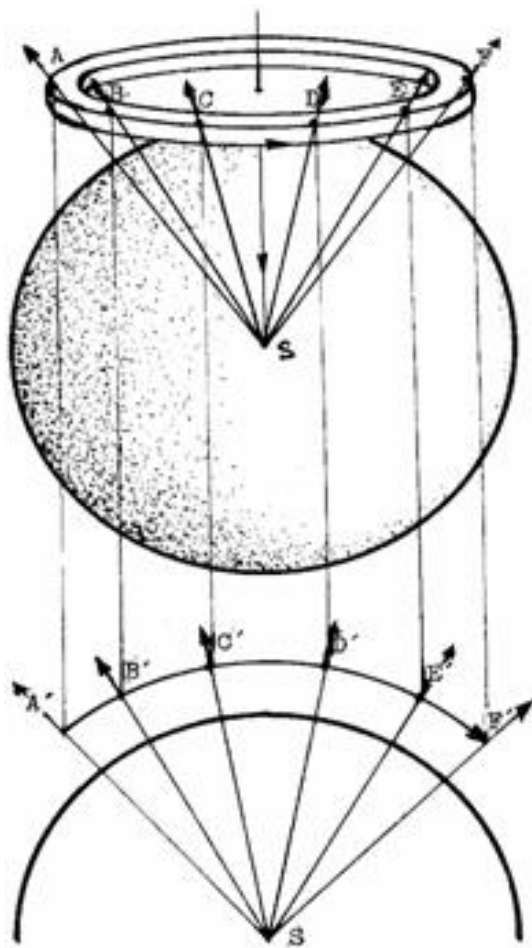


Figure 2: The orientation of a gravifugal ring-craft shown on the Earth's surface.



The Big Idea: Can a high-speed rotating ring attain a free-fall levitation effect?

Bosnic: Quite correct. That velocity is the velocity of a satellite in stable "free-fall". At that velocity, mass develops gravifugal force that equals that of gravipetal, and because of it astronauts and their spacecraft don't falling to the Earth's surface. Perhaps it would be more appropriate to say that they do fall, but never reach the surface because of the velocity. The velocity to levitate a low-altitude ring is a negligibly higher than that of astronauts.

AAG: The ring that you're proposing isn't large, is it? You're talking about something between 1 and 20 meters in diameter, rotating at a speed of 7,900 meters per second. Can you describe the construction of this device for us, and some of the challenges in materials-stress & energy-consumption that are involved with that kind of rotation speed?

Bosnic: Not 1-meter, but rather 10, 20, or 50 meters in diameter. The actual size depends mostly the device's purpose & primary application. The lowest velocity should be 7900 m/sec. (It is velocity to achieve the free-fall levitation effect). The ring must be constructed from nano-tubes, because other materials are probably not enough strong. The ring is accelerated by electrical energy transformed into Tesla's rotational electromagnetic field, just like a conventional motor.

AAG: Assuming that we've got your prototype Gravifugal Craft powered-up and ready to go, what kind of output thrust are we looking at, and does it remain constant with altitude, or possibly decline as the distance from Earth increases?

Bosnic: Very good question! Gravifugal (vertical) acceleration of the craft is not constant. It increases with increasing altitude (the distance from Earth's center). That is what makes the gravifugal force more powerful and suitable for propulsion than an antigravity effect. Conversely, if we want to avoid gravifugal acceleration, we must decrease the velocity of ring. Decreasing the rotation would decrease thrust, which would be a requirement when landing the craft. This phenomenon is already well-known in astronomical science. A gravifugal craft is subject to the same laws as any conventional spacecraft.

AAG: Speaking of which, the free-fall effect that I mentioned earlier makes sense within the Earth's gravity-well, but would this thrust continue after we've left the Earth's gravity-field -- say at something like a Lagrange point between the Earth and the Moon?

Bosnic: Well, at that point behavior of a gravifugal craft becomes equal to the behavior of a "classical" spacecraft.

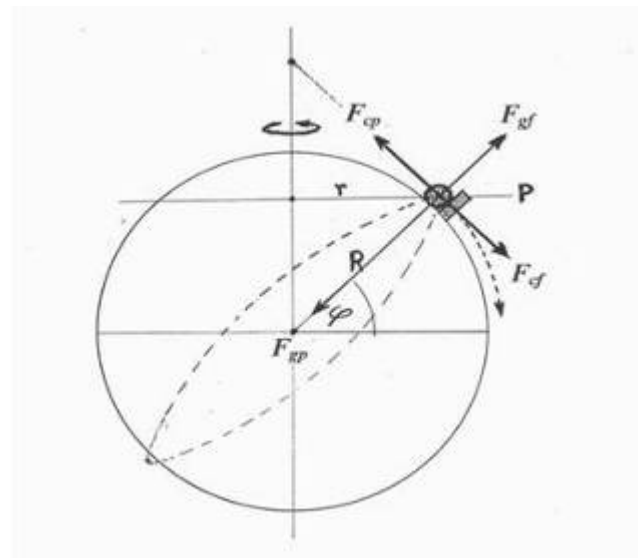
AAG: Now in addition to the ring, would you require some type of special apparatus to turn the craft for directional control? Can you tell us how you'd change orientation, especially given a rotating body's resistance to a change of aspect?

Bosnic: The gravifugal force itself only enables vertical thrust. This lets a craft attain or to stay at a given altitude over the surface of Earth or any other celestial body. For movement in other directions is necessary to use another type of engine.

AAG: Your research, based on satellite observations, indicates that the Gravifugal Craft could generate tremendous thrust, but wouldn't defy the basic conservation of energy laws. Can you elaborate on this?

Bosnic: "Tremendous" !?! It would be better to say "very big" or "large" ...or try "several millions of kilo-pounds of thrust" if made with the strongest materials available today. This would include a craft specially fitted with a quantum ring – but despite this massive force, the craft doesn't violate any conservation of energy laws. However, it would be efficient enough to get to orbit several times in one day. Electrical energy is used to accelerate the ring and lift up the craft.

The beauty of the concept is that the ring stores energy like a flywheel – when you want to land the craft, you can decelerate the ring by using it as a generator, which transforms its kinetic energy back into electrical energy for storage in a battery-bank. To get back into orbit again, you simply use the stored energy, thereby saving everything except friction-losses in the process.



Force Axis: The axis of thrust is perpendicular to the plane of rotation, away from the Earth's center.

This strategy is obviously also in accordance conservation of energy. It should greatly reduce the cost of operation for this craft.

AAG: Now the "moment of truth" in building this device is the materials-science: since this is a mass-based effect, and not an electrodynamic one, the rubber would tend to meet the road in terms of finding a strong enough material to withstand the rapid rotation. You've talked about using Carbon Fiber, so can I get you to tell us more about some of the materials that would come into play in an actual prototype?

Bosnic: Yes, I talked about Carbon Fiber, but only for experimental gravifugal devices. The tensile strength of carbon-fiber unfortunately isn't sufficient to build a full-scale gravifugal craft. The best material seems to be nano-tubes, which are very expensive in today's market.

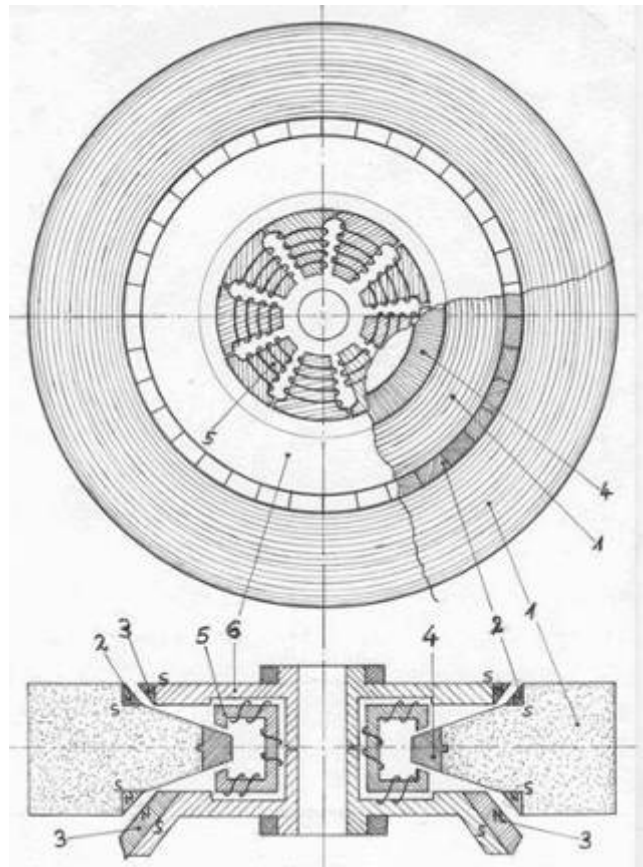
AAG: In terms of construction, have you done any initial prototyping yet? I'm also curious what the costs might be, and if you've had an interest from the internet in funding a prototype?

Bosnic: Actually, there have been two small test-devices constructed so far. The first measured 35 cm in diameter and was built by myself. The second measured 40cm in diameter, and was constructed by Kyle and Kevin Golsh – two aerospace engineers from Clearwater, Florida. The purpose of these devices was to confirm that it's possible to achieve stable rotation of the ring in magnetic field. That is very important. These devices were not expensive – the entire cost was around \$1,500.

I am very interested in find somebody able to invest money in at least one prototype made from carbon-fiber, which I would use to measure gravifugal thrust. This device will require the implementation of two equal but counter-rotating rings because of the symmetrical distribution of gravifugal force.

AAG: Your prototype schematic does seem to use electromagnets, which I'm inferring are to create the rotation in the ring. Based on your published designs, is it accurate to say that basically the ring itself is a giant electric-motor?

Bosnic: Yes and no! A craft fitted with mechanical rings has many elements of an asynchronous electromotor without a firm axis; however it is not exactly an electromotor. A craft fitted with quantum ring has some elements of a synchrotron particle accelerator, but is a quite new and unique device -- a device that rotates pure light at velocity c . Light rotates simultaneously in clockwise and counterclockwise directions, making interference "standing wave". The

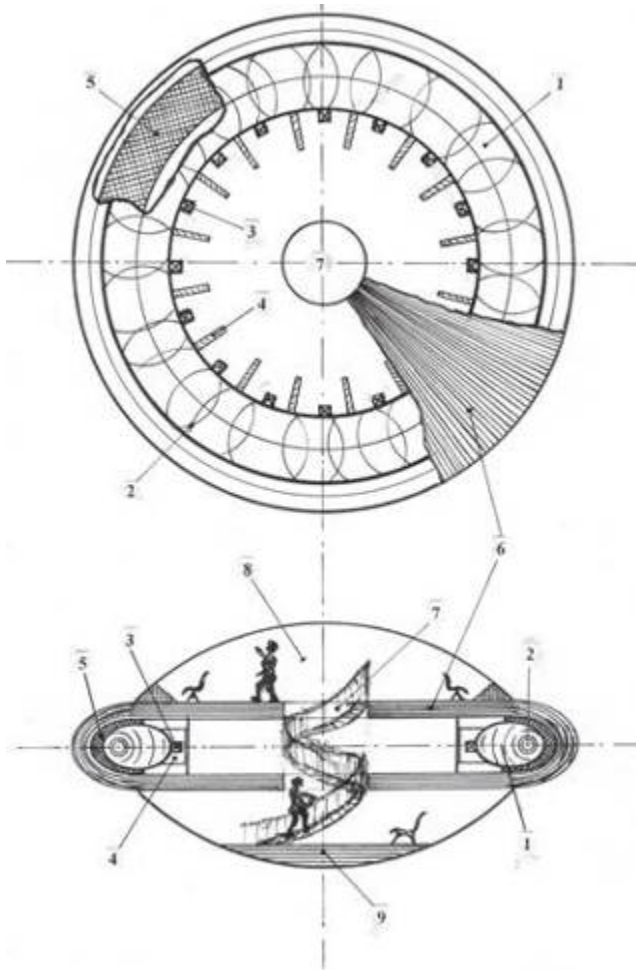


Self-Spin: Bosnic envisions the ring acting as an AC motor/generator using conventional EM principles.

gravifugal thrust for this standing wave is very large!

AAG: As the ring begins to accelerate, do you notice a gradual decrease in weight, or does it suddenly take off without warning? You've indicated that the propulsion begins once the velocity of the ring exceeds the rotational speed of the Earth, and I'm wondering if you could walk us through the process of what the power-up & liftoff process might be like?

Bosnic: The reduction in weight occurs gradually. At the required minimum "free-fall" velocity, the ring loses all of its weight. If we further increase its velocity the ring begins to press the magnetic field of its casing over itself and starts to lift of the craft - also gradually. The casing and construction of the craft do not rotate themselves, only the ring inside does.



Gravifugal Craft: A rendering of what a full-scale gravifugal craft might look like (minus the turbolift).

AAG: You've got three designs published online for prototyping: first, a conventional electromagnetic motor, and second, a motor using permanent magnets to increase the motor's efficiency. Design number 3 is truly unique, though -- you've described something using a "Quantum Ring", which is a ring made of pure light. Can you tell us about this concept, and how it works without a massive ring?

Bosnic: I've already addressed that question above, but see my [website](#) for more detailed information.

AAG: Let's close with your contact info - - what's the best way for people to get in touch with you, and where can they learn more about your research?

Bosnic: The best way for anybody serious to contact me is by normal snail-mail. Unfortunately, my email box is often full of spam and other rubbish, and I worry about losing serious messages about this research. Additionally, I've also published a book on the topic entitled – "New Physics". You can buy it by internet using the keywords Petar Bosnic Petrus New Physics. [\[Click here for more information\]](#)

Petar Bosnic is an independent inventor & professor of the arts living in Croatia, Hrvatska. His focus includes applying the principles mechanical engineering to innovative propulsion technologies. You can learn more about his research online at the following URL: [Petar Bosnic Online](#)