**Implosion Group Development**

**This document: on**

**H.I.P.**

**Hydrodynamic Inertial Propulsion**

# Implosive IMPLULSE:
# Inertial Field Thrust Re-invented- The Inertial Induction Field.

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Mathematics appendix with team member Martin Jones

Breakthru Technology for thrust- INDUCING INERTIA:

Some of the original mathematic context from our group:

www.fractalfield.com/mathematicsoffusion

Some of our early notes on non-linear and solid state thrust at:

www.goldenmean.info/thrust

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STAR TREK PHYSICS: It sounds presumptuous but we can very accurately now describe a physics to the 2 types of thrust- for gravity field inertial propulsion used:

1. IMPULSE POWER: The inertial field of thrust generated when inertial fluid is pumped with VERY ACCURATE TRANSLATION OF VORTICITY AROUND A TORUS (see non-compensated spin inertia - below).
2. WARP ACCELERATION: The inertial field of thrust generated when a phase conjugate (so called di-lithium crystal) is pumped (like a phase conjugate mirror)- to produce intense gravity field production (WARPING SPACE)- inside. (see KOWSKY FROST EFFECT- - in separate Crystal Propulsion Document).

**1: (IMPLOSION) IMPULSE POWER:**

***Precession of inertial action of the donut- and Inertial Stabilizer-***

***Not only does the Inertial Induction Field create thrust in a revolutionary and non linear- and overunity process - it can also be used as the ultimate inertial stabilizer.***

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We know that all four states of matter have the properties of rotational or gyroscopic inertia. When we cause fluid to flow in a vortex, that vortex also has the properties of gyroscopic inertia. A fluid coil can also have this property, with a difference—we can throttle that effect on and off more easily than stopping a high-mass gyroscope. So a helical coil of fluid with a high velocity can have the same effect as a high-speed gyroscope. In Star Trek, we hear the term "inertial dampers" used. On board ships we have gyroscopes to stabilize the craft and prevent the passengers from getting seasick.

What are the applications of a fluid coil? Here are some examples:

• Use in low mass vehicles (500 Kg or less) to provide stability in high winds.

• Boats can also use this to stabilize the ride.

• Aircraft can also use this for stabilization- from small single-engine to jumbo jets.

• A belt with self-contained pumps can be used in physical therapy.

Symmetric coils can have only gyroscopic moments of inertia, but what if we make an asymmetric coil, or one that has more force on one side of the coil than the other? What happens then?

If one analyzes the effect, it can be seen that there is an asymmetry to the force inside the coil, and the centrifugal force of the fluid on one side is greater than on the other. Thus the coil has the appearance of being either heavier or lighter depending on which side the narrow end of the coil is facing that contains the high velocity fluid. This is based on the common formula for CF:

$CF = MV^2/R$

Where centrifugal force is in newtons, mass in kg, velocity in meters per second, and radius in meters.

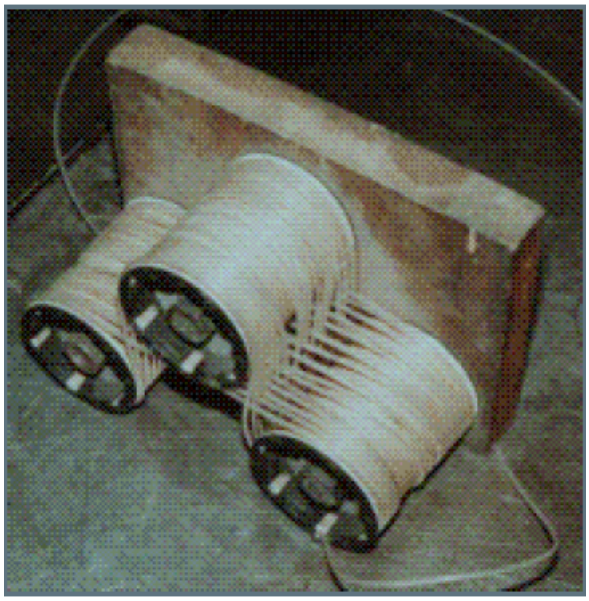
There are different ways of achieving this asymmetry. We can make a coil similar to a celtic knot, where one series of loops is non-compensated. We can make a manifold of separate lines. We can cut the loops into a material for an internal

manifold that imitates the vascular anomalies in salmon and bumblebees. There are many ways of achieving this effect.

We see from the formula above that the effect goes up to the square of the fluid velocity, but is directly proportional to the mass. So this means that the fluid velocity is critical to the effect. Since a greater density means more effect, a denser fluid is also helpful. It is also divided by the radius, so a tighter radius means a greater effect. However, reducing the radius also means reducing the cross section of the fluid, which means less mass. So the two of these tend to cancel out. Also, any friction in the pipe reduces the velocity, so any friction is a big no-no, and Viktor Schauberger's whirl tubes come to mind.

Working within these restrictions, we can still design systems that demonstrate the effect. Maximizing this effect is the challenge, and one that we fully accept. Beginning with these early demo units, we can envision further developments that include pulsing the fluid, dense liquid metals, plasmas, and other innovations that include changing the geometry of the coil into complex configurations.

Let's look at the picture below. Notice that in 2 arms the flow is compensated (a symmetry opposite exists) – but the the 3rd middle loop- the flow pushes up as it rotates BUT DOES NOT PUSH DOWN.

- picture here- IRISH CELTIC KNOT- as an example of NON COMPENSATED INERTIAL FORCE
- 
- ***Reminiscent of a CELTIC KNOT- OR IRISH BRAID- note the center loop is an example non-compensated inertial force. When fluid flows in such geometries a 'translation of vorticity' (the center vortex is 'non-compensated)- This translated rotation to thrust in a potentially non-linear way.***
- ***This is like a liquid motion version of the famous "Cook Drive". (ref- book: "Death of Rocketry")***

- ***Trefoil Winding Design test: July 2014:***


160-200 grams
of lift
Non-Compensated
Fluidic Loops
Preliminary Test
less than 100 Liters/ Min ( 2HP Pump)
160 to 200 grams gravity effect
July 2014 trials

Normally- of course these forces of generated TRANSLATION OF VORTICITY- where fluid (or charge) in a loop-translates some of its rotational inertia to linear inertia – would generate only small amounts of thrust. HOWEVER – after we observed the tremendous amounts of thrust that can in fact be generated (see Bill's story – appendix below)- our group has developed –with our mathematician- DETAILED PHYSICS EQUATIONS SHOWING WHY IN FACT THE AMOUNT OF INERTIA OR THRUST YOU CAN GENERATE IN THIS WAY – IS GREATER THAN THE AMOUNT OF POWER OR WATTAGE YOU USE TO MAKE THE THRUST (gravity production).

These equations output very specific graphical detail showing HOW TO OPTIMIZE THE AMOUNT OF NON-LINEAR THRUST GENERATED BY SIMPLE TOROIDAL FLOW using the precisely required:

• Angle of spiral vorticity – of the wrap of the fluid inertial tube around the torus.

• Number of turns per torus

• Inside and outside diameter of the torus

• Flow rate, flow velocity, and fluid specific gravity

And thus **predict very precisely the (very un-expected) huge amounts of inertial gravity field- which can be created by accurate toroidal flow.**

See graphic proposal detail below- toroidal impulse power.

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We propose that we will allow one investment partner- to own up to 49% of the IMPLOSIVE IMPULSE project- ownership, control, and intellectual property.

The investment required is a surprisingly reasonable cost here to bring this to final PROOF OF CONCEPT.

Specifically-

25,000 Euro for 6 – 8 months of technician time-

15,000 Euro for Lab space and basic lab costs / lab hardware

73,000 Euro for hardware specific to each of the 3 THRUST Prototypes see below.

Total 113,000 Euro.

Once that further proof of concept is completed PROPULSION TECHNOLOGY will never be the same. Commercialization will change the world.

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# Implosion Group Project Summary

# Propulsion

**Top Projects for Implosion Group Development**

1) Herringbone Plate / Warp Coil
2) Toroidal Drive (M-Drive)
3) Crystal Drive- separate document.

## Explanation of Phases:

**Phase 1** consists of devices that are already known to work. They require a minimal amount of engineering, and near zero R&D. The first priority is to select devices that are passing into the public domain, in which the inventor has either lost interest, is deceased, or the device has been purchased by a company which is no longer a viable entity. Therefore, it requires a minimal amount of expenditure for resources for both testing and legal research. Phase 1 timeline is 1-2 months for proof of concept, and 2-6 months for production.

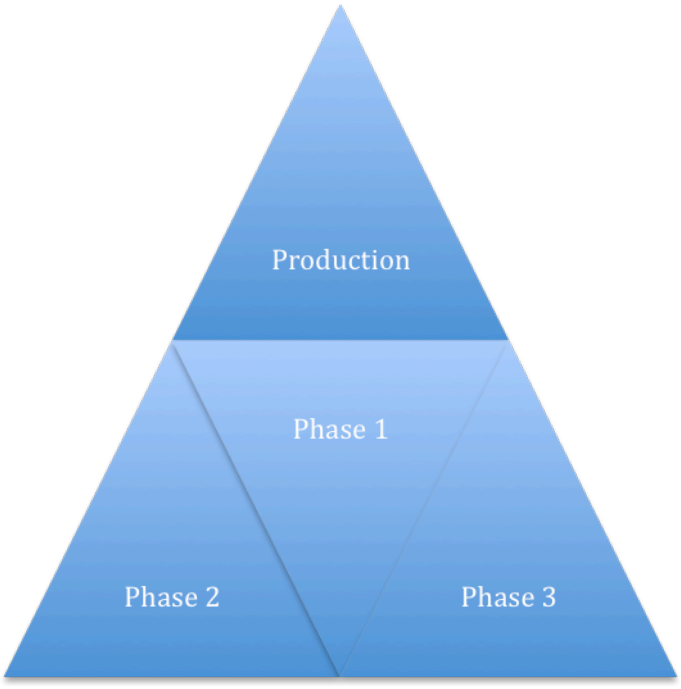
**Phase 2** consists of devices that the inventor has either given up on, or has substantial "bugs" in the design that prevent it from fully realizing its potential. Our team will "fix" those design errors, creating something ready for market. The major expenditure will be in R&D reverse engineering and computer modeling to discover the design flaws and rectify them. We will employ strategic partners not directly involved with the company to do this. The reason is that some of these concepts are politically incorrect, and both governments and corporations may target either the individual doing the research, the company that directly employs them, or possibly both to quash the research. For this reason, our legal department will formulate a strategy that protects all involved. Once the "bugs" are fixed, the project then graduates into Phase 1, and is passed along to the appropriate department. Phase 2 timeline is 2-4 months before passing into proof of concept, and phase 1.

**Phase 3** consists of a design concept that seems reasonable and workable. It has either a set of plans or schematics, or a written description that is detailed. Phase 3 types can go back a hundred years or more. The requirement is that there is no physical model that has been tested, being more in the conceptual realm. This has

some elements in common with Phase 2 in that R&D is required, however no reverse engineering and debugging is needed. Once proof of concept is established, Phase 3 projects graduate to Phase 1. Phase 3 timeline is 3-5 months before passing into proof of concept and Phase 1.

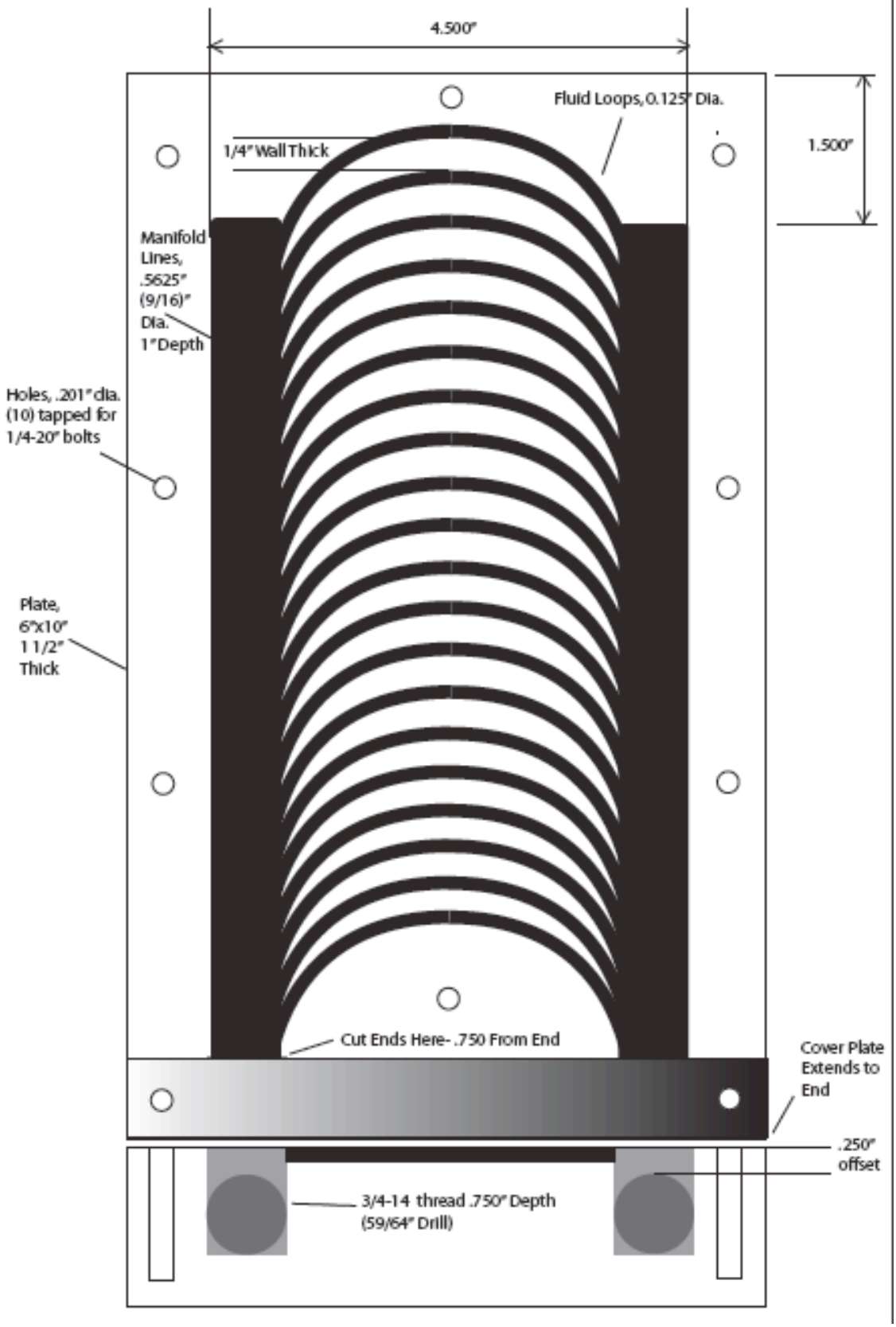
As you can see, all three phases dovetail into each other. It is arranged that there is a continuous line of products moving through phase 3 through phase 1 and production. It is this shotgun approach that will prevent any external diversionary tactics from targeting any individual project, as they are a continually moving target.

The same approach is given with the facility. Three separate locations are chosen. Each location works on different projects in differing phases. If one location, or laboratory is targeted, then the personnel are transferred to the other locations. The same can be said of "acts of god" or geophysical phenomena. If one location is compromised, then the redundant locations take over, with personnel transferred there. A more detailed plan is in "Politics and Energy: A Plan For The Implementation of Alternative Energy", written up for the Inventor's Weekend of 2005.



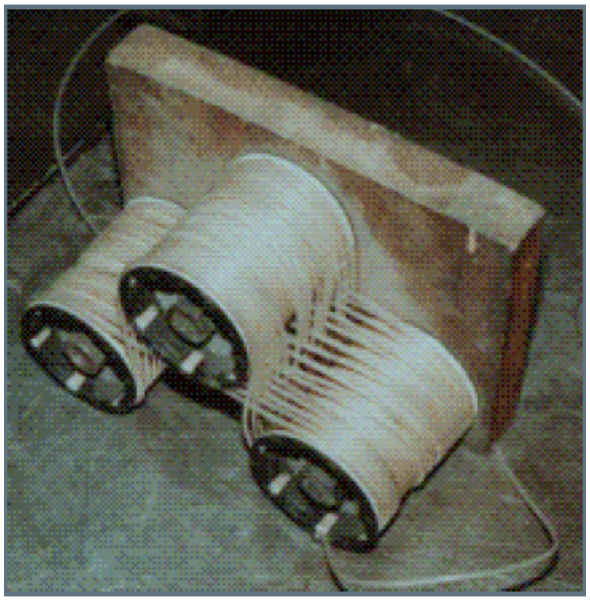
# Phase and Hardware Cost Per Project
# Implosion Group

| Project | Phase | Cost (Euros) |
|---|---|---|
| 1) Herringbone Plate | 3 | 18,000.00 |
| 2) Toroidal Drive | 2 | 25,000.00 |


4.500"
1.500"
Fluid Loops, 0.125" Dia.
1/4" Wall Thick
Manifold Lines, .5625" (9/16") Dia. 1" Depth
Holes, .201" dia. (10) tapped for 1/4-20" bolts
Plate, 6"x10" 1 1/2" Thick
Cut Ends Here- .750 From End
Cover Plate Extends to End
.250" offset
3/4-14 thread .750" Depth (59/64" Drill)

## Project #1: Herringbone Plate

This project consists of a Tesla pump connected to a plate suggested by the design work of Victor Schauberger. The plate consists of several fluid loops arranged in an array. It produces the same uncompensated force component as in the trout turbine, with the exception that these are arranged in a linear array instead of a radial one. Therefore, it produces a linear force. This design evolved out of several designs over a period of 20 years, and is an optimization of the original "warp coil" design. It was found that in the coil, there was a substantial parasitic loss of the additional cores, and in analysis eliminating the cores and keeping the loops maximized the effect. An analogy to this is in electromagnetics: a flow of charges in a helical motion produces a magnetic field. In this case, a flow of mass in a helical motion produces an inertial field. We unbalance that field with the loops, and have a directional effect.



***Reminiscent of a CELTIC KNOT- OR IRISH BRAID- note the center loop is an example non-compensated inertial force. When fluid flows in such geometries a 'translation of vorticity' (the center vortex is 'non-compensated)- This translated rotation to thrust in a potentially non-linear way.***

***This is like a liquid motion version of the famous "Cook Drive". (ref- book: "Death of Rocketry")***

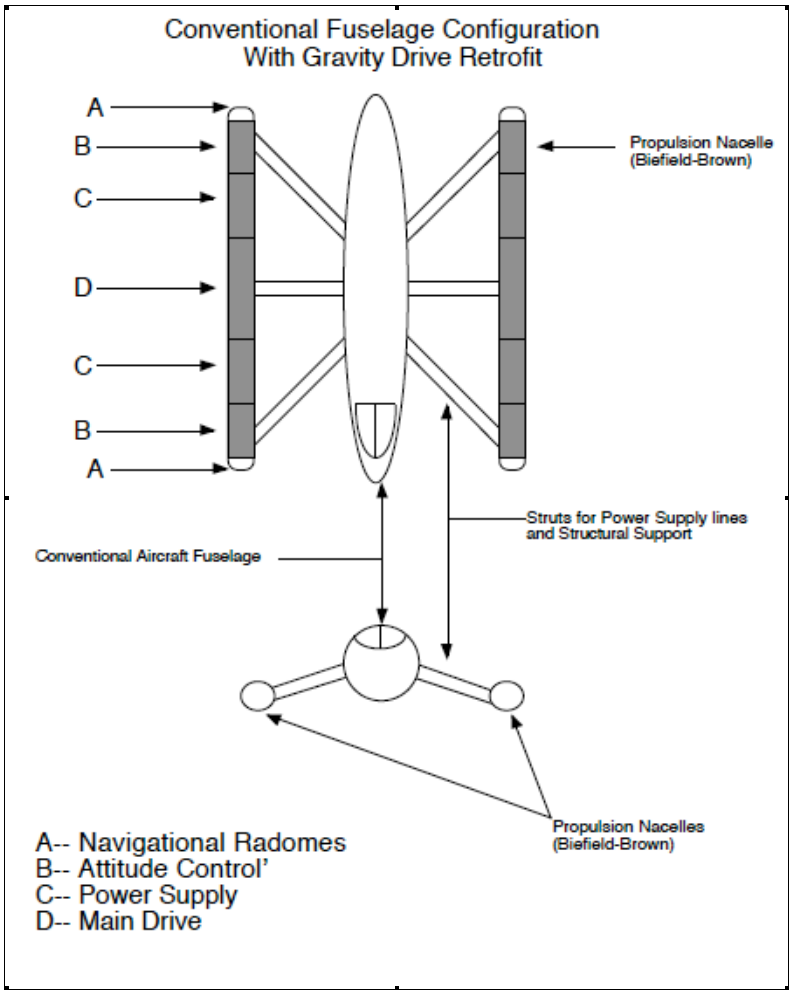
### Past Experiments

The first model produced from 5% to 20% weight reduction from the force pulling the device upwards. This was confirmed by flipping the model upside down and measuring again, noting a weight gain. Excel spreadsheet analysis indicated that the design needed change, and in the next version, the optimized configuration has 10 times the power density. This system will produce 200 kilograms of thrust (if one

can call it that) per plate. A test bed will be built with one plate for proof of concept, and then another will be constructed for a pair. It was also found that conventional hydraulic pumps are inadequate for the pressure and volume requirements of the design, and quotations for a Tesla pump are being gathered. An approximate figure would be $8,000.00 for proof of concept, pending receipt of quotes.

**Phase 1: Small Aircraft – Experimental**

In this version, the plate array is energized by a Tesla pump driven by a conventional Briggs and Stratton engine. Four plates are arranged in a vectored thrust arrangement with equatorial mounts. Proportional valves control pitch and yaw, and changing the attitude of the plates control direction of thrust and turn, as they are yoked together. This is built into a go-cart frame for testing. If this works, then larger plates with approximately one ton propulsive equivalent force in the shape of nacelles are attached to a conventional private aircraft in pairs. The propeller is removed, and a Tesla pump is installed in its place. Controls for proportional valves are installed in the cockpit. Testing is then done in preparation for phase 2. Cost for phase 1 is anticipated in the $8000.00 USD range, not counting labor.

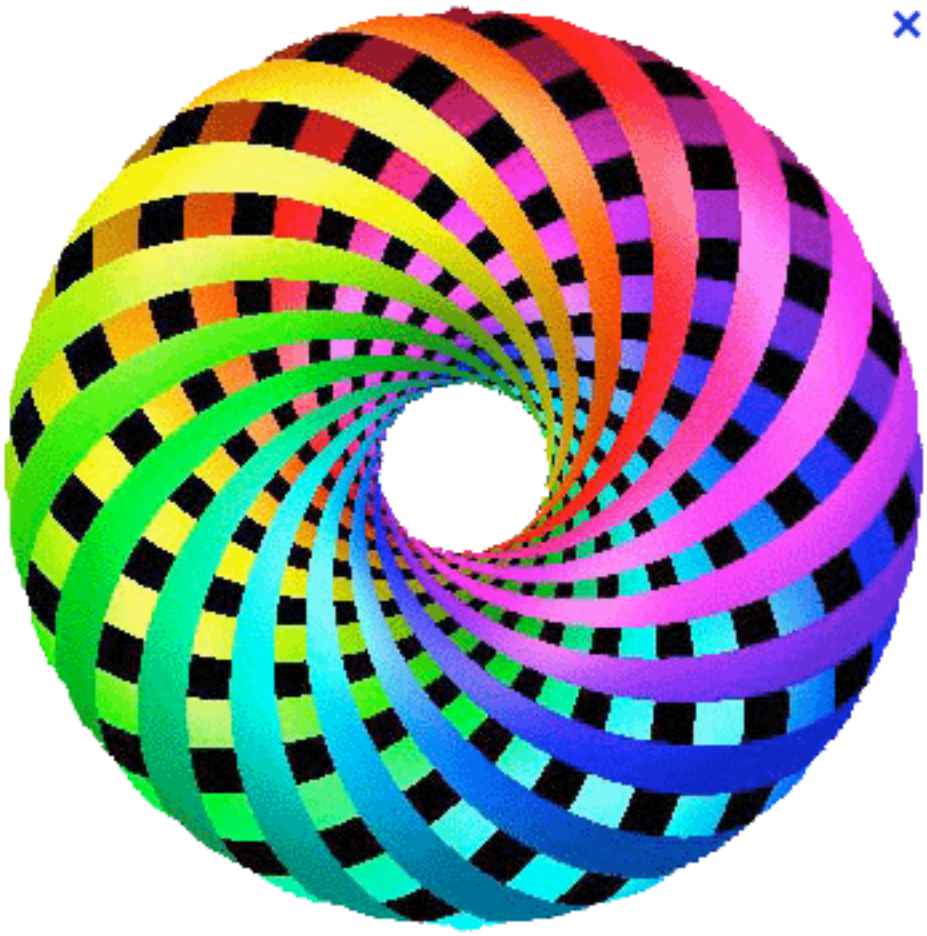



**Phase 2: Commercial Aircraft**

In this phase, similar nacelles with larger magnitude force equivalents are installed in a commercial aircraft. In this case, there are two sub-phases. In the first one, a conventional turbine spins a Tesla pump for the nacelles for propulsion with controls for the nacelles in the cockpit. The nacelles are designed for a power equal to that of the original thrust of the engines, or a bit higher. The next sub-phase will take a trout turbine, and use it to turn the Tesla pump. This then eliminates the need to run conventional turbines at all. Another alternative will be to change the configuration of the nacelles, and include an internal vectored thrust system controlled through proportional valving. This now eliminates the need for wings for lift. After several thousand hours of in-flight endurance testing, only then would it be necessary to eliminate the wings. However, adjusting the field density of the two nacelles will eliminate the problems of clear air turbulence and several other maladies while the aircraft has wings. An additional piece of hardware that may be installed is the fluid gyro- a helically would coil of hydraulic line around a core. In this case, the core is needed. In physics, all four phases of matter has the same inertial properties, therefore we run fluid around a coil for a dynamic fluid gyro that we call the inertial damper. The inertial damper is connected to an X-Y-Z

accelerometer assembly to determine if the acceleration exceeds parameters. If so, then fluid is shunted through high-speed valves into the fluid coil. The inertial damper adjusts the gyroscopic inertia of the aircraft it is installed inside to prevent turbulence effects. Other uses are also anticipated for this technology.

Cost of retrofit has yet to be determined. However, the benefits will be cost-competitive.



## Project 2: Toroidal Drive (M-Drive)

This project consists of a torus, or donut geometry for a core, and a winding of a fluid coil around it. In preliminary design models with a 1.6 meter diameter core it is indicated that a thrust of 15,000 kg is obtained. This figure rises to the square of the increase in diameter, so therefore a proof of concept with a 16 centimeter diameter will have a thrust, or impulsive force of 150 kg. The mathematics are rigorous, and have been independently verified.

Phase 1 testing will consist of placing the coil on a scale and slowly raising volume and pressure until a COP of 1.0 is achieved. At this point the device is in neutral buoyancy. The optimal lift is then obtained, and then the math model is “tweaked” with the additional data.

Phase 2 testing will be with duplicate units mounted inside equatorial mounts as in Project #6. This will consist of a non-tethered craft capable of independent motion. Burn-in testing will consist of placing the test rig in a free hover for 100 hours for endurance testing 1 meter off the ground. The next test will be for max altitude and velocity with a ballistic parachute on each corner in case of engine failure. After testing for 100-200 hours, then the next phase is initiated.

Phase 3 places the drive in the back of a conventional airframe. At full scale, the engine will develop 15,000 kg of thrust, equal to a small jet engine. A Tesla pump is attached to a conventional APU, and that is connected to the M-drive. The conventional jet engines are throttled down, and if possible shut down, and the craft is propelled by the M-drive.

Phase 4 testing first places 3 of the larger units in corners of a delta-shaped airframe, with cargo capacity equaling the Space Shuttle. Each propulsion unit is within gimbaled mounts to provide for vectored thrust. At a smooth 1 gee acceleration, it is anticipated that orbital velocity will be reached within 20 minutes. The propulsion system can be configured for a 1 gee acceleration indefinitely. What this means is that the long-awaited 1 gee spacecraft is here. After this is anyone's guess. Space tourism, asteroid mining (which is a trillion dollar business), and space-based industry are only the beginning. We have to collectively decide the route this civilization will take. But one thing is certain…

Things are looking up.

-- Also see Appendix – below-
Bill Donavan's experience- of THRUST FROM TOROIDAL FLUID PUMPING.

Appendix –

**Bill Donavan's experience**
**Crystal THRUST**
**And THRUST FROM TOROIDAL FLUID PUMPING:**

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It has been a fascinating journey. It began in the 1980's, when I was a technician in an Engineering lab of a company in Northern Illinois. I had a small motor, about two pounds, in a test jig that weighed well over a hundred. When it began to vibrate in a defective condition called rotor rub, in which the rotor began to bang against the stator, a peculiar phenomenon developed that I will never forget that put me on this journey. (Now, usually rotor rubs do not do anything as unusual as what I am about to describe).

After the hum permeated the fixture, the whole assembly noiselessly slid across the surface of the table and slammed into a concrete block wall. I turned off the power and tried moving the fixture. It wouldn't budge. I then thought it was probably due to the vibration, and turned the motor on again, yanking at the fixture. It still stayed where it was. It took two people and a pry bar to put it back where it was. I took the motor out and inspected it. Nothing unusual. I put it back into the fixture, assuming it was merely a fluke. After a few minutes of running it through the test sequence, it went into the rotor rub condition, and started to slide again. I grabbed the end of the fixture and put all my weight on it. I felt the hairs stand up on the back of my neck, with an odd sensation that propagated over the surface of my skin. It still slid into the wall. Whatever the force was, it was directional. I checked the table and found it to be perfectly level. In retrospect, I probably should have left the level on the bench during the "phenomenon", to see if it moved the bubble, for even though the table may have been level, it would have indicated if the effect changed the gravitational field around the fixture.

I pried the fixture back by myself, too embarrassed to ask anyone else. It took over an hour moving it less than an inch at a time. I spent my weekends after this at the Chicago Public Library looking up what on earth this could be. So began my education. I left the library each weekend with a briefcase filled with patents and articles. I learned about T. Townsend Brown, Paget, Dean, and others. There were so many that were buried in obscurity, waiting for someone to pick up the torch and run with it.

Was I up to the task? There were doubts, to be sure. My father was impressed over the sheer volume of work, and built two models of inertial drives. He independently proved several patents to be worthless, and both he and I concluded that mechanical drives are dubious at best.

Later I was approached to contribute to the Antigravity Handbook. I agreed, and wrote two chapters and the Biefield-Brown formula for the book, as well as contributing my own research to the bibliography.

The two relevant chapters are included in this book, as well as the Biefield-Brown formula. I discovered the Kowsky-Frost experiment at this time, and met with Jerry Gallimore in Los Cruces to obtain permission to publish a corrected version of his formula. I discovered that Jerry had claimed to repeat the Kowsky-Frost experiment with success. He said it was the real deal. After returning to Illinois, I spoke with Jerry, and he was firm about the crystal experiment being successful. That was the last time we spoke. After that he left for Hawaii, and I learned of his heart attack and subsequent death. I concluded that this experiment needed to be repeated. If verified, it would have enormous implications in both propulsion and energy.

In the 90's I worked at a company in Cabery, Illinois, which did injection molding as a setup and maintenance mechanic. Once again the antigravity effect manifested itself in a hydraulic plastic molding machine, which "walked" across the floor each time fluid surged through the high pressure lines.

After this, I studied the effect, and wrote the paper "IIM Possible":

**Genesis**

The true genesis of this device is in all the early centrifugal force to linear motion devices patented in the past 60-70 years, most notably the A.C. Nowlin drive and the work of Robert Cook. Bruce DePalma's spinning ball experiment revealed exciting insights into the nature of inertial interactions. I give these individuals a great deal of credit for their early pioneering work. Those who had the courage to break new ground and test proven theories contributed valuable information on the Newtonian laws that many take for granted. Work such as this should be continued, for instead of merely "reinventing the wheel", they provide the foundations for a new more comprehensive physics of motion, of which the one we are familiar with will merely become a specialized subset thereof.

To understand the operation of the device, an understanding of the inertial properties of matter must first be appreciated. All four phases of matter (plasmas included at this point) have the same inertial properties. They have the same properties of momentum. Why this has not occurred to these inventors I have no idea, but I can understand the problem of not recognizing an individual tree when one is standing in a forest.

I must delineate the work of Tom Bearden from this, since the directional force component has not been quantitatively measured in the ordinary helical coils which I have experimented with. When I once again have access to high-pressure and high-volume pumps this may be tested at some point in the future.

The original idea for this was an anomalous effect that I noticed when working as a maintenance technician at MMC Plastics of Cabery, Illinois. These presses have hydraulic pumps typically running at about 2000 PSI and 13.5 GPM. They have the potential for moving a lot of mass in the form of hydraulic fluid through their lines which average between 1/2"-3" in diameter. The inertial effects, which I noted dealt with the lines which ran from the directional valve to the press clamp cylinder. The principle behind a high-speed close in an injection molding press is that a large volume of fluid is sent into the cylinder at low pressure until a preprogrammed point is reached, at which time the pump shifts into low volume and high pressure. The high-pressure function delivers a minimal mass of fluid through the lines, therefore the effect is minimal. But when there is a sudden rush of fluid through the lines at low pressure and high speed, an interesting phenomenon occurs. It's called "walking".

The inertial "thump" of the fluid going through the lines results in a non-compensated force, if the lines are large enough and the radius is acute enough. I looked at where the presses were walking, and couldn't understand for the life of me why they were doing that. Then I looked at where the clamp cylinder lines were pointing. They pointed in the same direction that the presses were walking toward. My first reaction was "Naw, it couldn't possibly be due to that..." I wondered if the force was due to some weird electromagnetic effect that I hadn't heard of before. Hall-effect probes were mounted to the lines as well as lines going to a Fluke TRMS DMM with a peak sample-and-hold function. Probes also went into a 10 Mhz oscilloscope to measure any transient spikes that might be responsible for this effect. The tests were done on a Saturday when electromagnetic interference was at a minimum and all the other shop equipment was shut down.

And the results? The electric field potential was far to low in magnitude to attribute to the Biefield- Brown effect. The magnetic field intensity was far too low for magnetostatic propulsion effects. Any spikes generated were basically insignificant. That left only one other possibility that could not be eliminated: The mass flow itself. It was something that was self-evident, but it was so blatant, so obvious that I simply didn't want to believe it could possibly be that simple. That reminds me of the story of the T.V. technician that tears apart the entire chassis only to find that the set wasn't plugged into the wall to begin with. The simple solutions are the ones so far down in the grass that they're tripped over and ignored.

The solution was that centrifugal force itself was responsible for the effect. The action of the tremendous surge of fluid through the hydraulic line to the clamp cylinder produced the force responsible for the "walking". After that episode, I constructed two models. One had an I.D. larger than the other (see spreadsheet). The models were both connected to a hydraulic pump unit that had a 2.2 GPM capacity at 2000 PSI. At this point the pressure was irrelevant. All I wanted was a large a mass as possible flowing as fast as possible. The only pressure to speak of in the system was back pressure developed by friction with the walls of the stainless-steel or plastic hydraulic lines. The first model has an effective two turns in the coil,

a large internal diameter, and as a result of this a low fluid velocity. The effective percentage of lift amounts to 5%. The amount of directional force on the walls of the loops amounts to 2.73 lbs., which is the amount of that which is not self-cancelling. The best values were obtained with model #2, which had a 20% lift capacity and an elliptical cross-section for the tubing.

In model #4, this effect is taken to absurdity. The 600 GPM listed can either be supplied by a fire pump, an MHD pump, or a Tesla pump. Again, the back pressure of these systems is minimal, therefore all that is really needed is to keep the fluid velocity up to a nominal working level. Since the mass in the formula for centrifugal force is linear, dropping the fluid density down to that of hydraulic oil still results in a large directional force. Even if the model weight remained the same, the percentage of lift in that case would be 145.80%, still quite a respectable figure. This model has not been built yet, and at some point in the future when resources permit this will be constructed.

Appendix One:

Intro to the Equations-

Based on Navier Stokes equations-

To accurately predict how efficient the conversion to thrust is from a correct path TRANSLATION OF VORTICITY- using a high inertia toroidal pump:

# Fluidic Toroid Drive

Update to the toroidal impulse section from our mathematician Martin Jones:

Note the very high amount of thrust that can be generated by inertial pumping in the toroidal OPTIMIZED TRANSLATION OF VORTICITY - 'sweet spot' pathway:

Reference our original paper with Bill Donavan and Dan Winter:

www.fractalfield.com/mathematicsoffusion

**Abstract**

Newton's three laws, well known for their theoretical use of point masses for several centuries have described physical motion. It is also well known that these laws apply only in non-relativistic circumstances, but nonetheless work for celestial mechanics and the physics problems of today on our home planet. Nonetheless, the assumption that an object of mass is a point particle has seen no exhaustion of application to objects that are consequently not point particles. The results of the current study employ, to the author's knowledge, a new application of Newton's second and third laws of motion. Normally we know the forces impinged on an object and are able to calculate its trajectory by employing the Second Law. In the current study, we impose a point masses' kinematics with parametric equations which comes from some "magical" sum of forces yet to be computed. And because we are applying this theory to a fluid, we can do just that by passing the "fluid element" in a pipe. It is now known that our "magical" force is the inner wall of the pipe acting on the fluid element. Then Newton's Third Law says "When one body exerts a force on a second body, the second body simultaneously exerts a force equal in magnitude and opposite in direction to that of the first body."[Wikipedia] This means that by imposing kinematics in a tube we are able to induce reactionary forces on the inner walls of the tube, culminating in thrust when several fluid elements are accounted for (which could account for a continuous media in the limit).

1. **Newton's second law:**

$$\boldsymbol{F}=m\mathbf{a} \qquad (1)$$

2. **Newton's Second Law Reversed**

$$\mathbf{F}=m\partial^2\mathbf{r}/\partial t^2 \qquad (2)$$

Where $m_1$ is the mass of one fluid element, **r** is the known position vector, and **F** is the "magical force" that produces the kinematics. Now the reactionary forces $\mathbf{F_r=-F}$ by Newton's Third Law. This is the simplicity of a model that circumvents the Navier-Stokes equations for internal flow by assuming a discontinuous media but still uses the same underlying conservation properties of Newton's laws that the Stokes equations ultimately derive from.

## Application to a Wrapped Torus

A toroid wrapped with a coil of tubing that produces the "magical" constraining force for the fluid elements we send through the pipe in a slightly asymmetric fashion produces uncompensated forces, or Newton's Third Law "reaction" forces. However you may like to call them, they are produced from spin asymmetry motion of objects forced to translate in a mathematically reproducible set of parametric equations for the tube trajectory (26.5 turns):

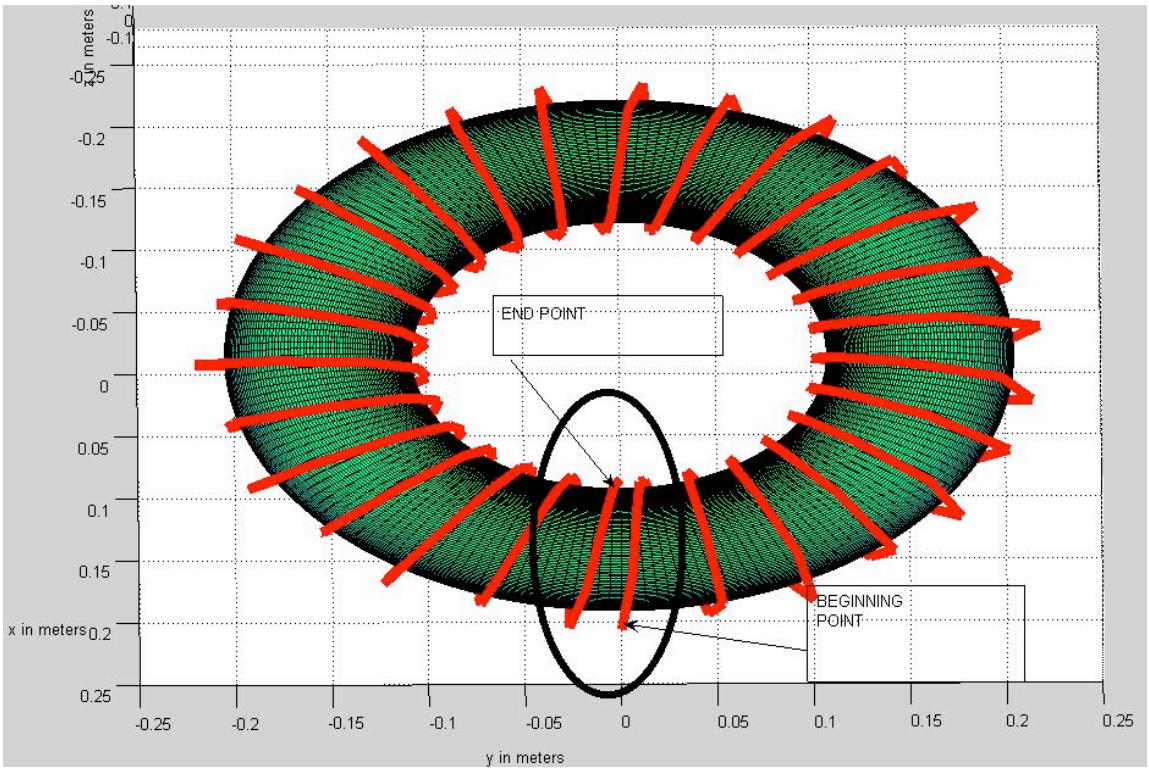


**Figure 1. A toroid wrapped 26.5 times. We have found that symmetrical wrappings produce no thrust, whereas wrappings such as this produce thrust at harmonics of a computed frequency.**

For the following examples of chosen wrappings we choose a torus with Major Radius as 16cm, Minor Radius, 6cm, 16mm ID tubing for the fluid and the following equations to estimate the length of tubing required for a particular number of turns, the fluid velocity required for a particular angular velocity chosen from the plot, and the mass of one fluid element.

**Length of tubing:**

$$L=2\pi RminT \qquad (3)$$

Where $R_{min}$ is the minor radius of the torus, and T is the number of turns. This estimate doesn't work for the shorter number of turns, but over 10 turns is acceptable.

**Fluid velocity:**

$$Vf=RminT\omega \qquad (4)$$

Where $\omega$ is the angular velocity of the fluid around the azimuthal angle of the torus. Coincidentally the number of trips around the torus per second for one fluid element is $\omega/(2\pi)$.

**Mass of one fluid element:**

$$M=\rho ALN \qquad (5)$$

Where Rho is the fluid density, A is the open cross-sectional area of the tubing, and N is the number of fluid elements. For all cases 200 elements were used. To show the "sweet spots" where maximum thrust for a particular wrapping (26.5, 25.75, or 10.5) is to be found, we look to the harmonic frequencies shown in the contour plot of force with two axes being time and angular frequency of fluid motion around the azimuthal angle of the torus. This goes without saying that from further research, it is possible that many asymmetrical wrappings (because whole number wrappings have shown to have null thrust effects) have these sweet spots, and it remains to be seen how to maximize the thrust according to the number of wrappings because of the inherent non-linearity of the model parameters.

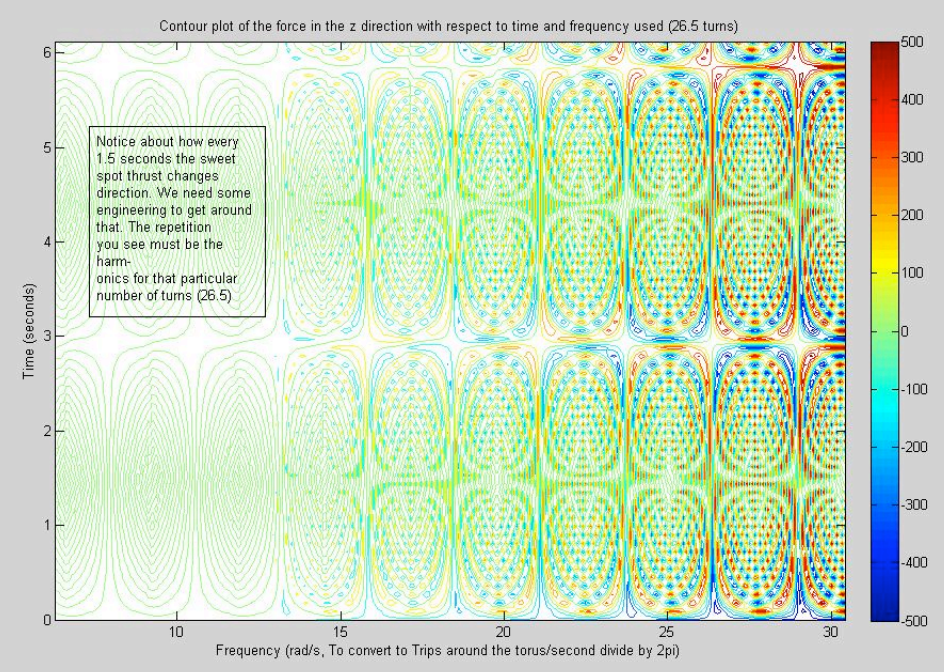


**Figure 2. Force (Newtons) contour plot of time versus angular frequency for 26.5 turns with a harmonic of about n*2.5 (rad/s).**

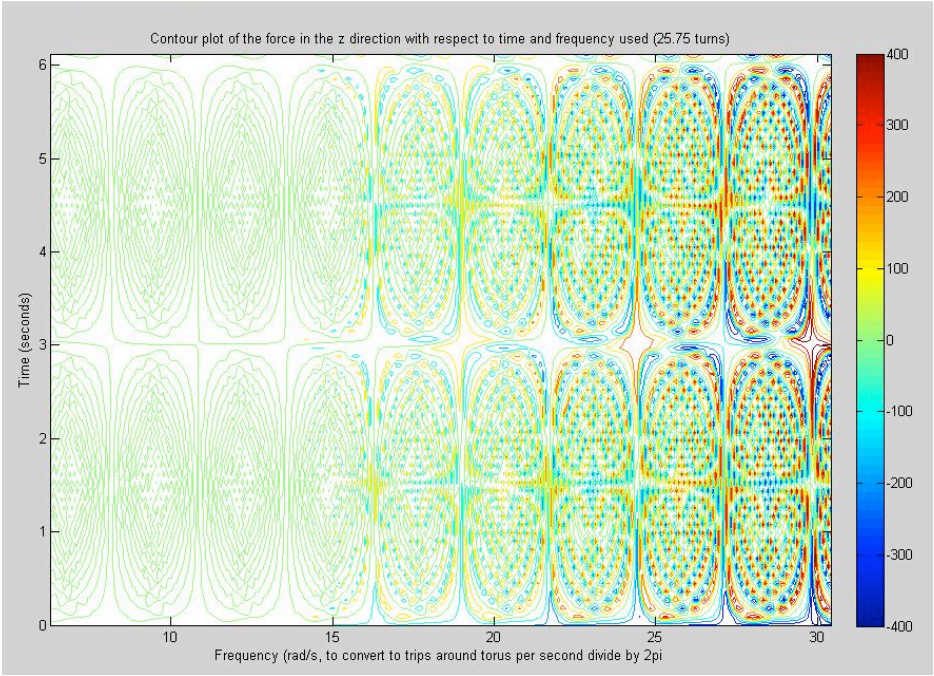


**Figure 3. Force (Newtons) contour plot of time versus angular frequency for 25.75 turns with a harmonic also of about n*2.5 (rad/s).**

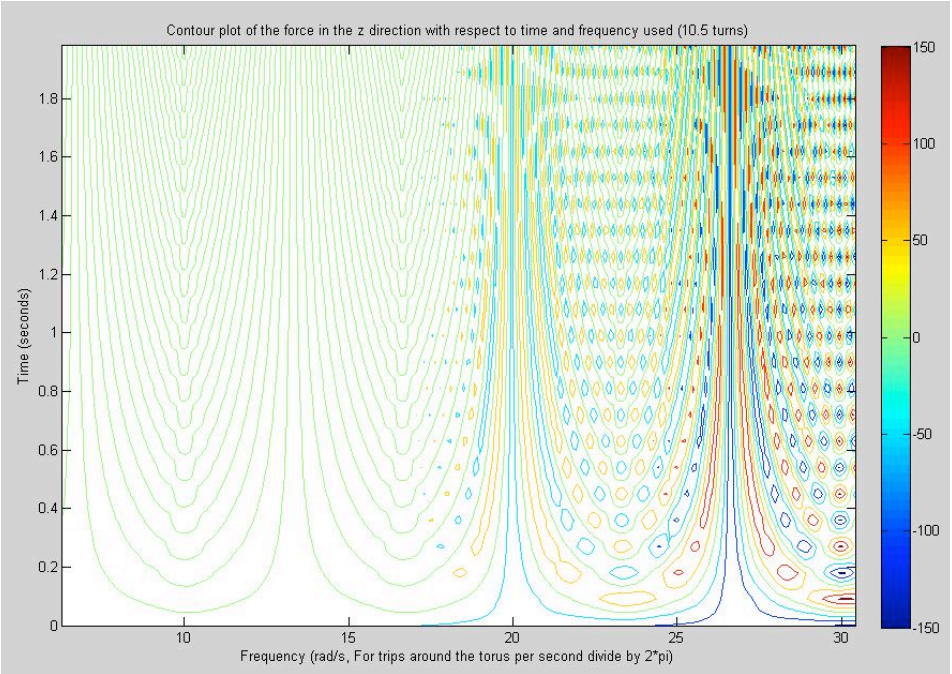


**Figure 4. Force (Newtons) contour plot of time versus angular frequency for 10.5 turns with a harmonic of about n*5.625 (rad/s).**