

The Serrano's Field Propulsion Thruster

SFPT v1.0

Built and tested by Jean-Louis Naudin

created on January 19, 2002 - JLN Labs - Last update February 17, 2002

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On October 5, 2000, the Hector Serrano's patent [WO 00/58623](#) " Propulsion device and method employing electric fields for producing thrust " has been granted.

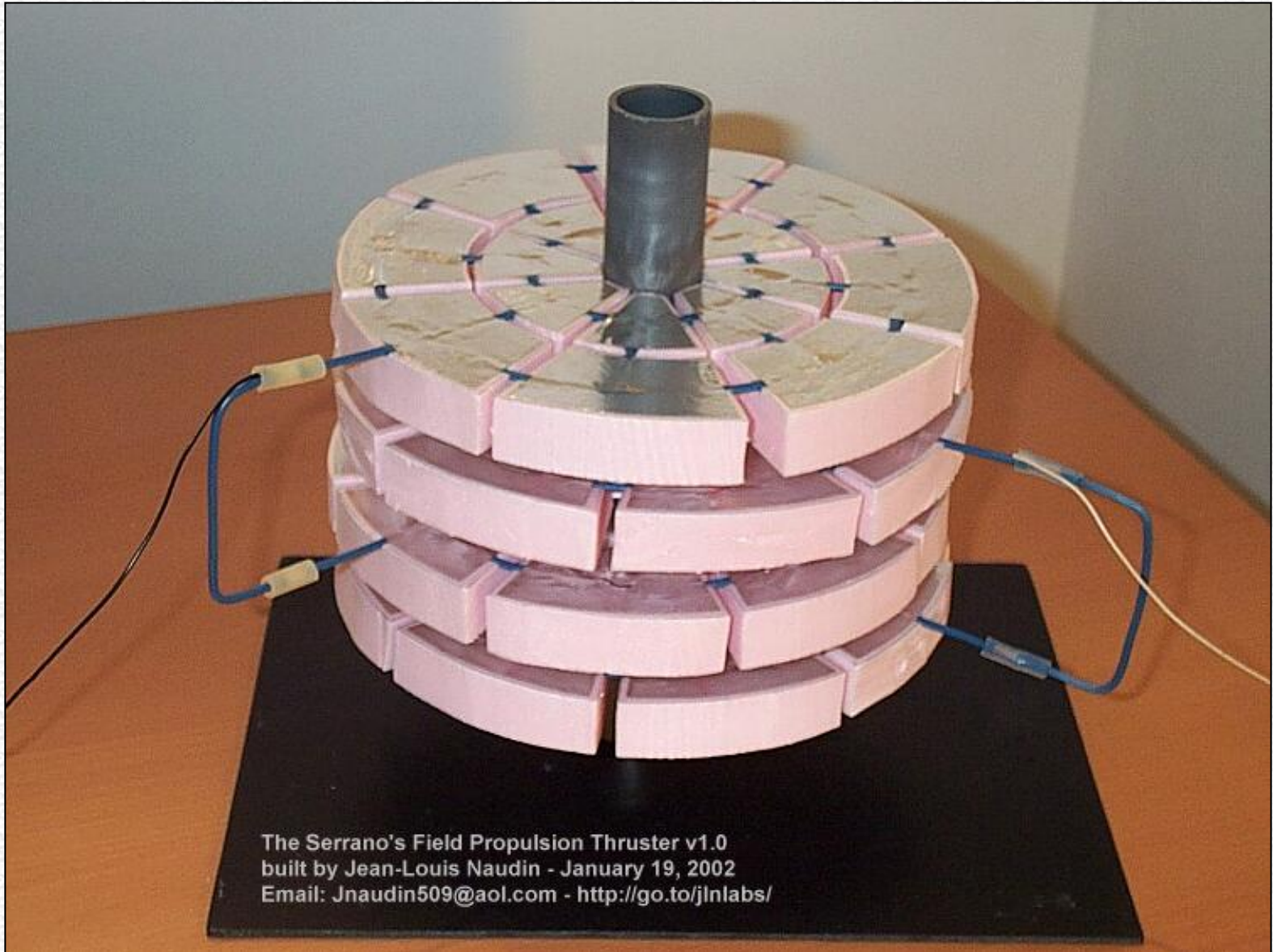
This patent is very close to the Aymmetrical Capacitor Thruster (ACT) patented by the NASA (patent [US 6,317,310](#) , granted on Nov 2001) that I have already tested successfully in Nov 18, 2001 (see the NASA [ACT v1.0](#) experiment) . These two devices use the Biefeld-Brown Effect for producing a thrust Vs the surrounding medium (this effect was discovered by Townsend Brown in 1928 in his Gravitator, see the [GB Patent N°300311 filed on Nov 15, 1928](#) "A method of and an apparatus or machine for producing force or motion" from T.Townsend Brown).

The Serrano's patent [WO 00/58623](#) contains some very interesting key points :

- " Such a vehicle can operate in any dielectric environnement such as air or **vacuum of space** " [page 12, line 28](#)
- " As a result, since the device (10) employing field propulsion **can propel itself without exhausting any matter** in the opposite direction of vehicle motion, it can propel itself **without being exposed to the environment (16) through which it is moving** " [page 8, line 11](#)
- " It has been discovered that **a preferred effect occurs when the capacitor is initially charging, not when it is constantly charged as in a typical DC system. The charging time is associated with a drift velocity of charges.** The DC device of the present invention operates with a constant charge rate that will, as the capacitor is increased in power, reach a **saturation level of capacitor and begin to create a leakage current.** The leakage current will continue to build up until the device suffers a dielectric breakdown where arcing occurs, thus limiting the maximum energy that can be included unto a DC device, significantly more than in a typical AC powered device " [page 6, line 6](#)
- " The channels (42) also increase the field effect by allowing the lines of force to be in a generally parallel arrangement, which, as is appreciated by one of skill in the art, increases the Lorentz force effect and therefore the field propulsion effect. The Lorentz force has been observed through experimentation as an important factor in the thrust-generating phenomenon. **The more parallel the lines of force are relative to each other, the larger the force effect for a given energy**

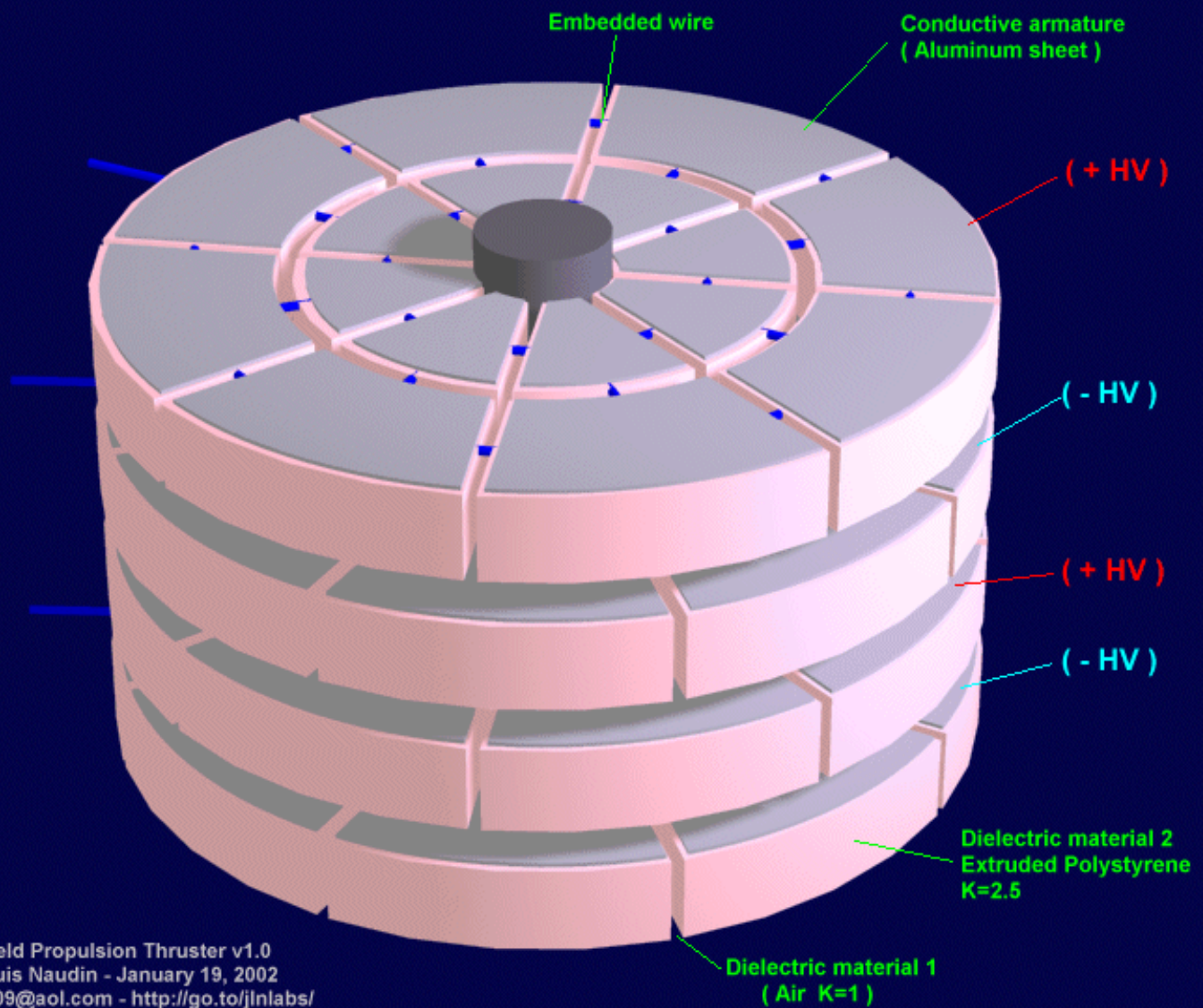
input. The Lorentz force is a recognized phenomenon that works partially by the forces generated between drift velocities of charges. " [page 11, line 9](#)

On January 19, 2002, I have fully replicated and tested successfully this Electric Field Propulsion Thruster patented by Hector Serrano from [Gravitec Inc.](#) (see the photo below).



Tested apparatus description :

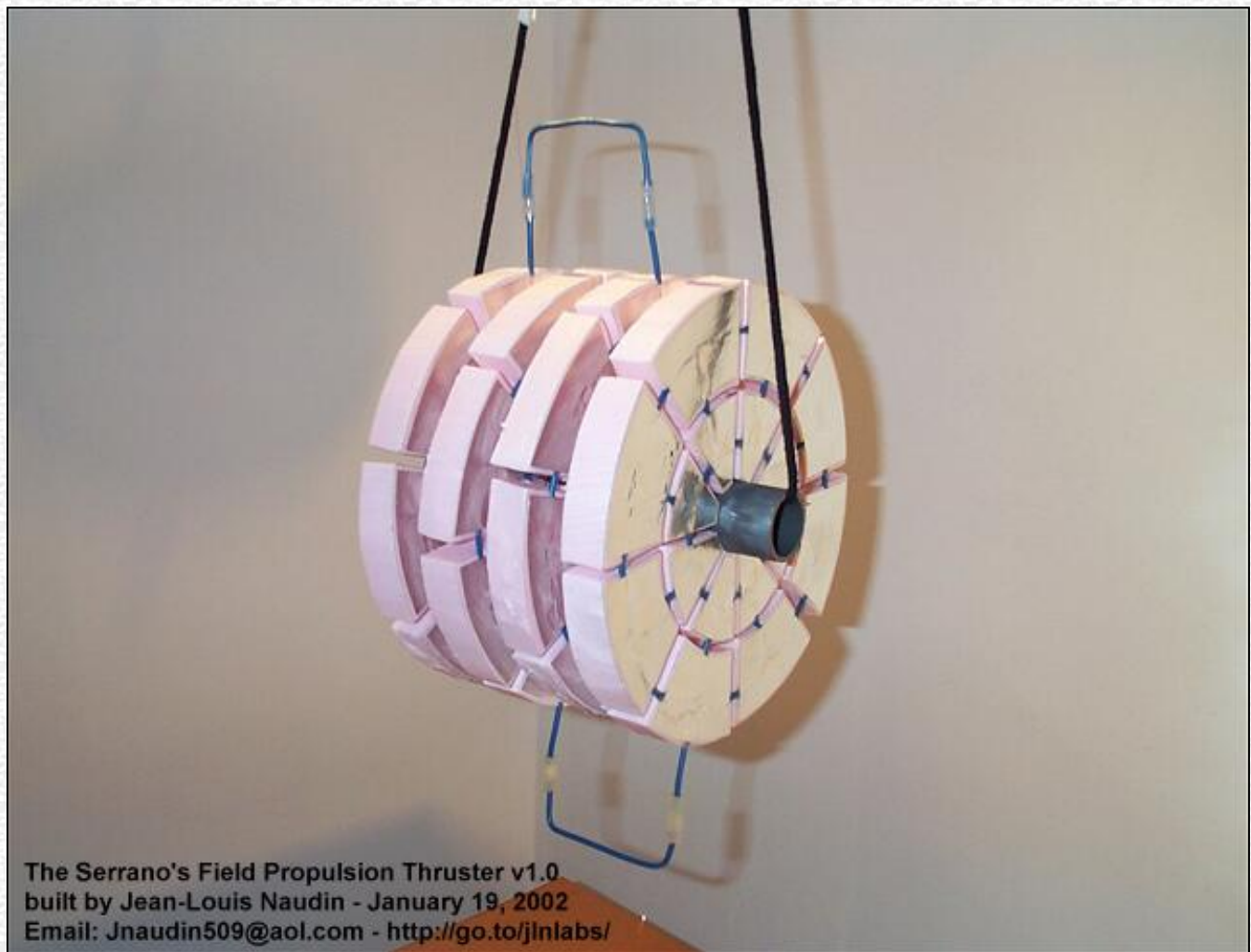
I have used the same design as described in the Serrano's [patent at the page 12](#) : << As earlier described with reference to [FIG 11](#), the dielectric material in the channel 42 is preferably of a relative lower dielectric constant than the dielectric 36 on which the electrode 38 is placed to allow for a non-linear relationship to form between plates 26 and their respective electrodes. Further, there is a layer of dielectric material between the cells 22 created by the lower dielectric 40 of lower dielectric strength as for material in the channels 42. This allows the desirable formation of the non-linearity in the field. The plate 26 can be arranged so that the channels 42 are aligned with the next set of plates as earlier described with reference to [FIG 11](#), or staggered to cause a larger non-linearity effect, as earlier described with reference to [FIG 14](#) >> (see the photo above and the diagram below)



The Serrano's Field Propulsion Thruster v1.0
built by Jean-Louis Naudin - January 19, 2002
Email: Jnaudin509@aol.com - <http://go.to/jlnlabs/>

The Serrano's Field Propulsion Thruster v1.0 specifications

- Conductive Armatures :
 - Aluminum sheet
- Dielectric material #1 :
 - Air, $K=1$, Dielectric strength = $3e6$ V/m
- Dielectric material #2 :
 - Extruded Polystyrene (Polyfoam XPS),
 - thickness = 20 mm, $K=2.53$, Dielectric strength = $24e6$ V/m
- Total Weight : 268 g
- Main diameter : 210 mm
- Height : 130 mm



The Serrano's Field Propulsion Thruster v1.0
built by Jean-Louis Naudin - January 19, 2002
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[Click here to see some construction details of the apparatus](#)



The SFPT v1.0 is hanged on a free rotating apparatus.
The High Voltage is sent through thin wires coming from the top and the bottom.

TESTS RESULTS (01-19-02) :

When the HV power supply is switched on, the Field Propulsion Thruster v1.0 is rapidly set in motion. The voltage used is 27 KV DC @ 480 uA. The turn speed observed is low. This is due to the low dielectric constant difference producing a weak non-linearity between the two dielectrics used in this experiment ($K=2.53$ for the Polyfoam XPS and $K = 1$ for the Air).

SFPT v.10 demo
by JL Naudin
Email: Jnaudin509@aol.com

The motion of the SFPT v1.0 and the net resulting thrust observed in the direction of the conductive armature when the High Voltage is applied confirms the field propulsion effect claimed by Hector Serrano in his patent.

[See the video of Serrano's Field Propulsion Thruster v1.0 experiment](#)

To see the videos, the free downloadable RealPlayer is required



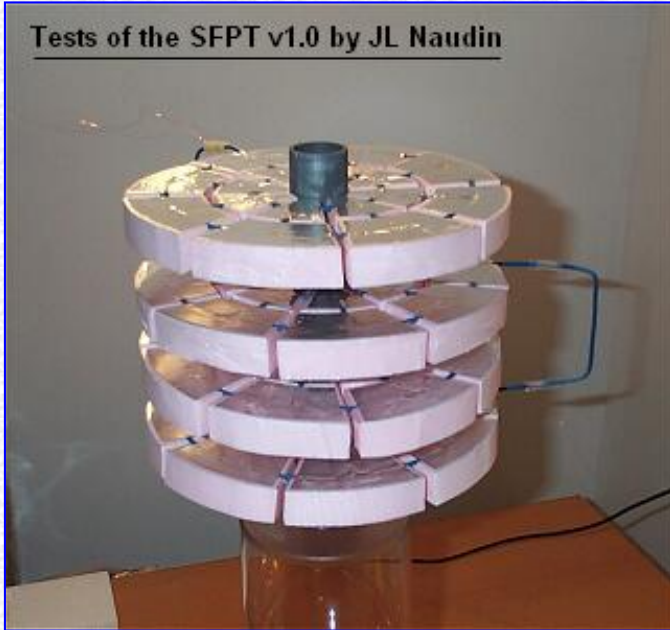
[Click on the picture above to see the video \(631 Kb \)](#)

Some documents references :

- Patent [WO 00/58623](#) (Oct 5, 2000) " Propulsion device and method employing electric fields for producing thrust " from H. Serrano.
- [GB Patent N°300311 filed on Nov 15, 1928](#) "A method of and an apparatus or machine for producing force or motion" from T.Townsend Brown
- NASA patent [US 6,317,310](#) (Nov 13, 2001) "Apparatus and Method for generating a thrust using a two dimensional asymmetrical capacitor module"
- AIAA-2001-3659 (*withdrawn*) - Anomalous Electrical Field Force Generation Experiment by H. Serrano, Gravitec, Inc., Kissimmee, FL; W. Hammond, NASA Marshall, Huntsville, AL; J. Rusek, Purdue Univ., West Lafayette, IN
- Link to the [Gravitec, inc web site](#).
- [Electrokinetic Propulsion: The Ionic Wind Argument](#) by William B. Stein - Purdue University - Energy Conversion Lab
- [The " Electrick Rocket "- Capacitor array, Gravity warp drive](#) from Tom Kennedy
- [The " Electrick Rocket " \(Original document with additional datas, August 1991 \)](#) from Tom Kennedy ([gravcap.zip](#))
- [FR Patent N°2651388 "Isolated systems self-propelled by electrostatic forces"](#) by Lafforgue Jean-Claude - March 1, 1991
- [Dielectric constant reference guide](#)

See also :

Tests of the SFPT v1.0 by JL Naudin



[The SFPT v1.0 : Tests and measurements](#)

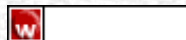


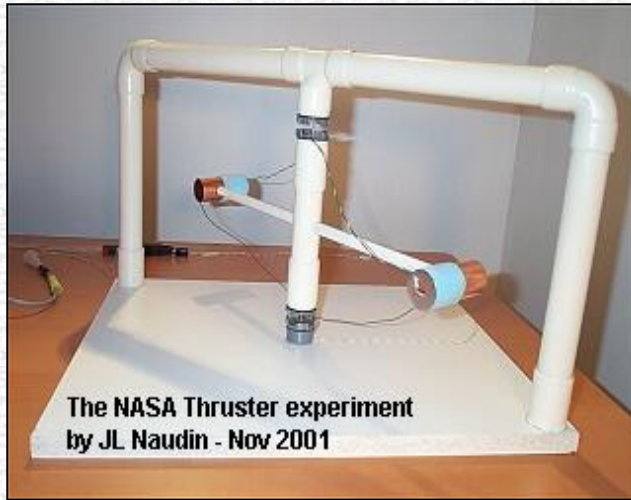
[The NASA Two Dimensional Asymmetrical Capacitor](#)

[Thruster](#)

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The NASA Two Dimensional Asymmetrical Capacitor Thruster

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By Jean-Louis Naudin

created on November 18th, 2001 - **JLN Labs** - Last update March 30, 2004

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On November 13, 2001, the NASA patent US 6,317,310 " *Apparatus and Method for generating a thrust using a two dimensional asymmetrical capacitor module* " has been granted.

On the **NASA TechFinder** web site (Public Release Date : Nov 6, 2001), we can read :

<< **Objective** : NASA scientists have discovered a method for generating thrust from two dimensional asymmetrical capacitor modules. The results are potentially greater efficiencies and improved reliability over currently available electric thrusters.

Description : In the past, inductive technology has been needed to create thrust, rotational motion, or step an actuator using electricity. This new technology accomplishes these tasks and more by using high potential, low current asymmetrical capacitor modules. The dielectric material of a capacitor under high voltage experiences a force. Based on the geometry of the capacitor, its material properties, and ambient conditions, the force can be predicted and utilized to move the entire capacitor and its mounting in a predictable direction. It had been theorized that thrust generation from this phenomenon was feasible, but no working prototypes had been developed, until now. >> ([Click here to read the full document](#))

United States Patent
Campbell

6,317,310
November 13, 2001

Apparatus and method for generating thrust using a two dimensional, asymmetrical capacitor module

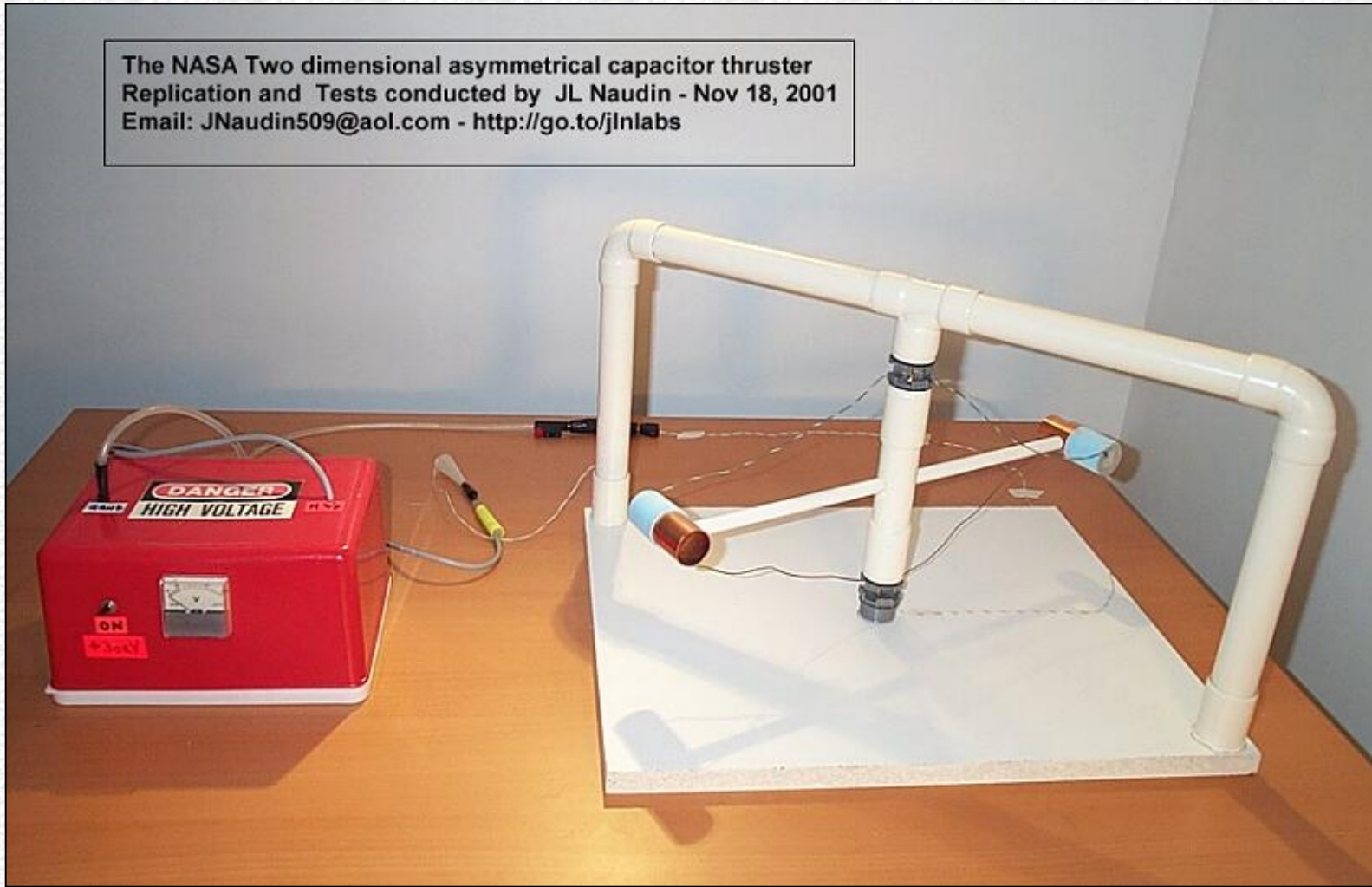
Abstract

A capacitor module system is provided for creating a thrust force. The system includes a capacitor module provided with a first conductive element having a cylindrical geometry. The first conductive element can be a hollow cylinder or a solid cylinder. The capacitor module also includes a second conductive element axially spaced from the first conductive element and of smaller axial extent. The second conductive element can be a flat disk, a dome, or a conductive tip at the end of a dielectric rod. A dielectric element is disposed between the first conductive element and the second conductive element. The system also includes a high voltage source having first and second terminals connected respectively to the first and second conductive elements. The high voltage source applies a high voltage to the conductive elements of sufficient value to create a thrust force on the module inducing movement thereof.

This apparatus has been tested in June 2001 by Transdimensional Technologies in the vacuum chamber of the NASA Marshall Space Flight Center (MSFC) in Huntsville (see the [photo of the apparatus tested in vacuum by TdT](#))

Today, on November 18, 2001, I have fully replicated and tested successfully the NASA thruster experiment (see the photo below).

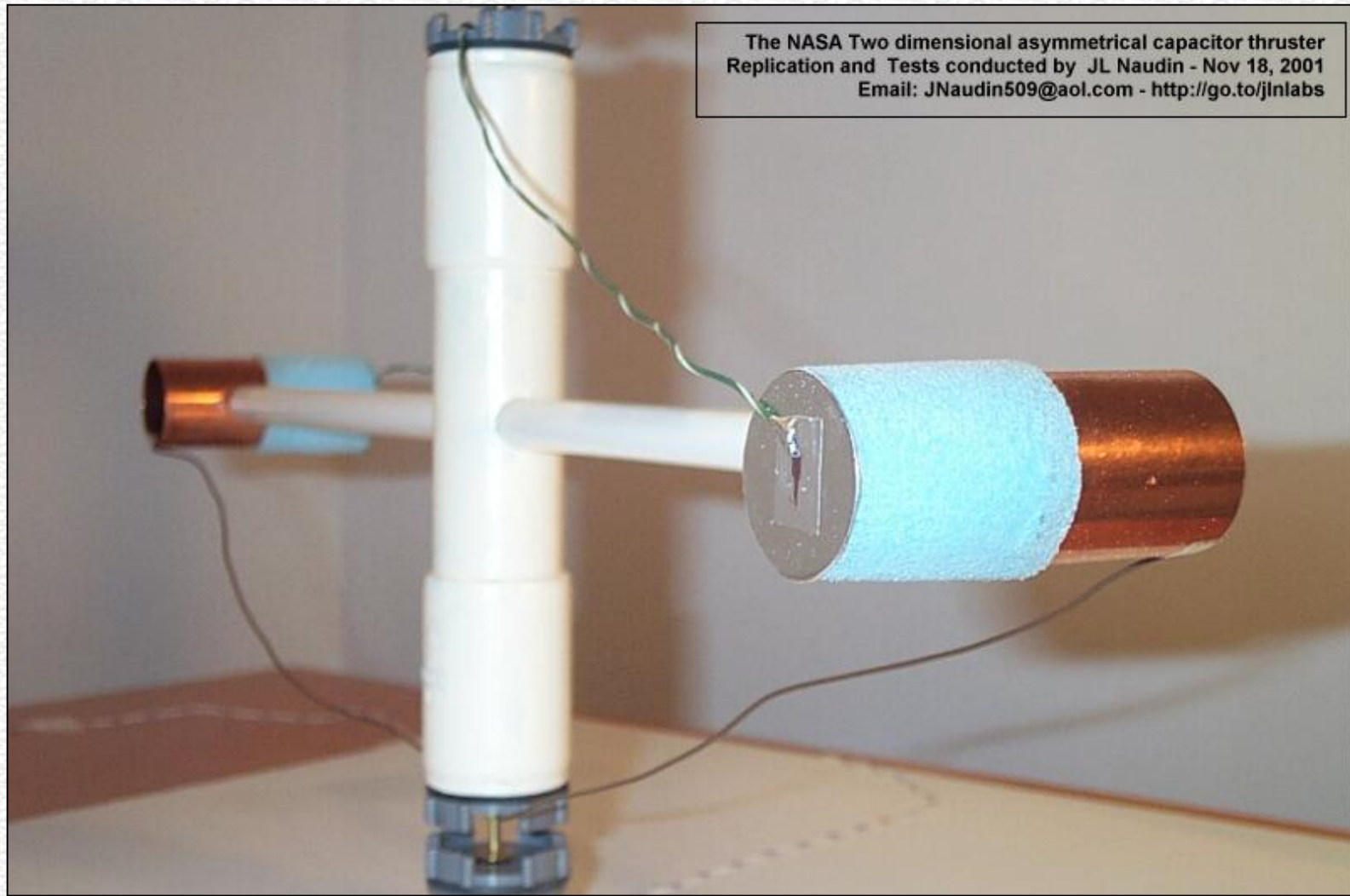
The NASA Two dimensional asymmetrical capacitor thruster
Replication and Tests conducted by JL Naudin - Nov 18, 2001
Email: JNaudin509@aol.com - <http://go.to/jlnlabs>



Tested apparatus description :

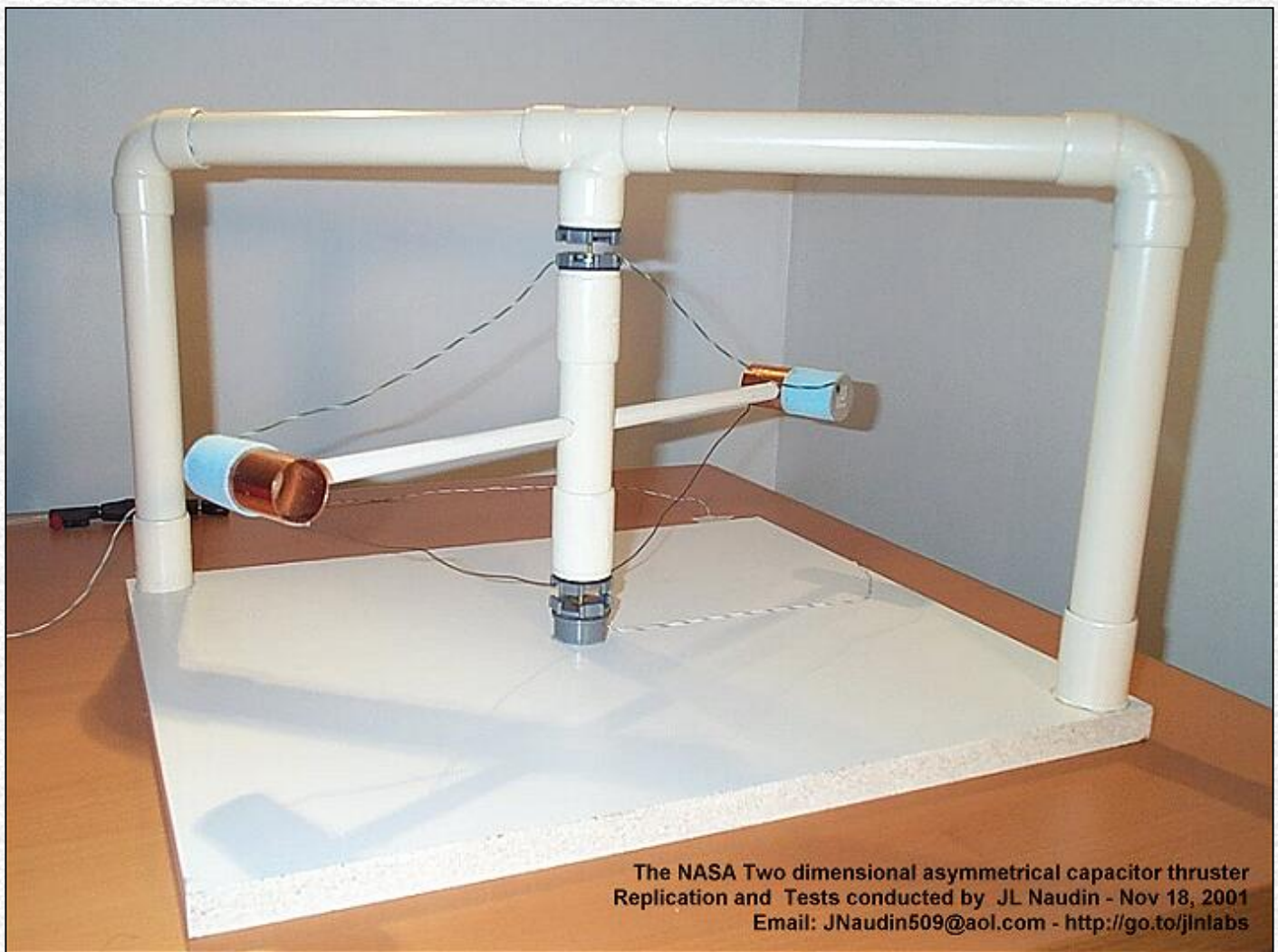
I have used the same design as described in the patent figure 2 : << Referring to FIG. 2, the module depicted, which is generally denoted 20, differs from that of FIG. 1 in that a **simple cylindrical dielectric element 25 is positioned between conductive cylinder 22 and disk 24**, instead of the cylindrical dielectric cylinder 15 and dielectric rods 16 employed in the embodiment of FIG. 1. >> (see the photo below)

The NASA Two dimensional asymmetrical capacitor thruster
Replication and Tests conducted by JL Naudin - Nov 18, 2001
Email: JNaudin509@aol.com - <http://go.to/jlnlabs>



The two asymmetrical capacitors are made with a copper tube, a Polystyrene "*Roofmat*" cylinder for the dielectric and an aluminum disk.

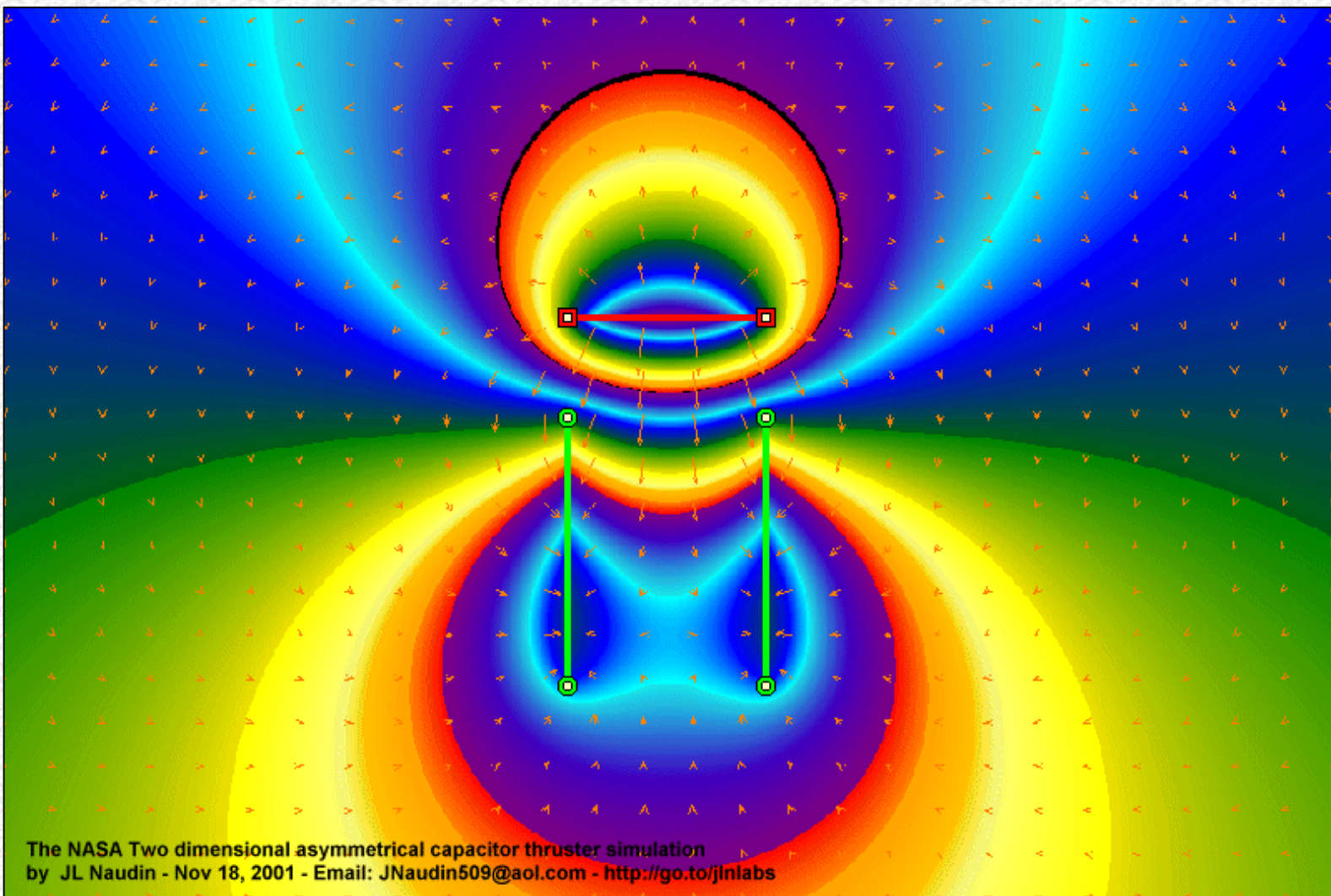
The capacitors are fixed on a 440 mm diameter frictionless rotor, and the HV is sent through the main rotation axis.



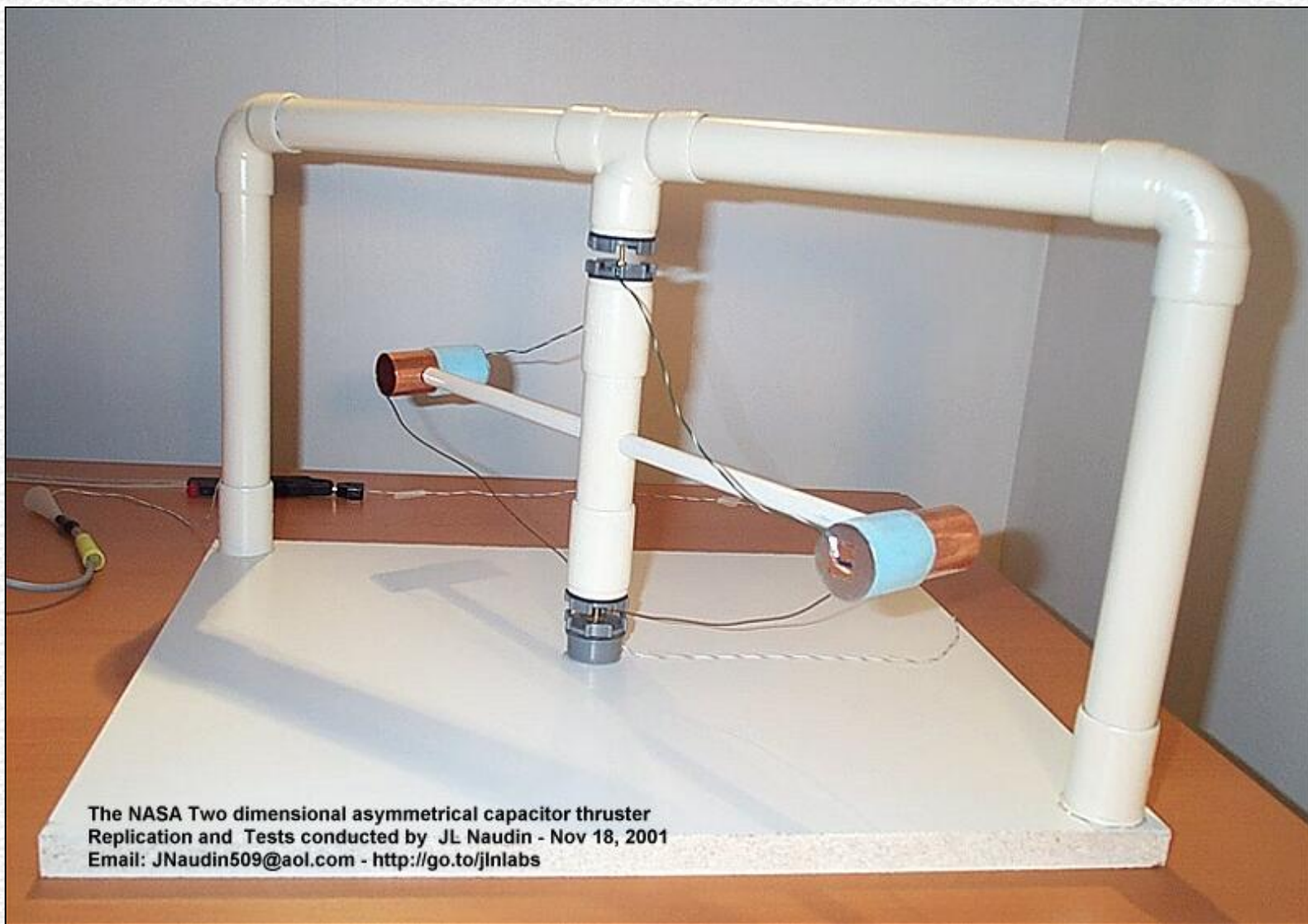
The Two Dimensional Asymmetrical Capacitor Thruster specifications

Asymmetrical capacitor :

- Main armature :
 - Copper tube (30 mm diam, 1mm thick and 40mm length).
- Dielectric :
 - A Polystyrene "*Roofmat*" cylinder block (32 mm diam and 33 mm length)
- Secondary armature :
 - an aluminum disk 30 mm diam and 0.5 mm thick.
- Weight : 40 g (each)
- Main rotor diameter : 440 mm



<i>Material</i>	<i>Dielectric constant (K)</i>	<i>Dielectric Strength (V/m)</i>
Air	1.00059	3e6
Polystyrene	2.56	24e6
Kapton	4.2	11.8e7
Barium Strontium Titanate (BaSrTiO ₃)	13800	10e7



[Click here to see some construction details of the apparatus](#)

TESTS RESULTS (11-18-01) :

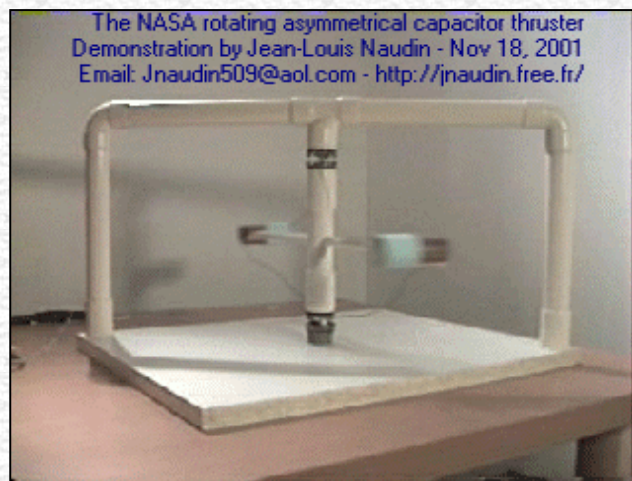
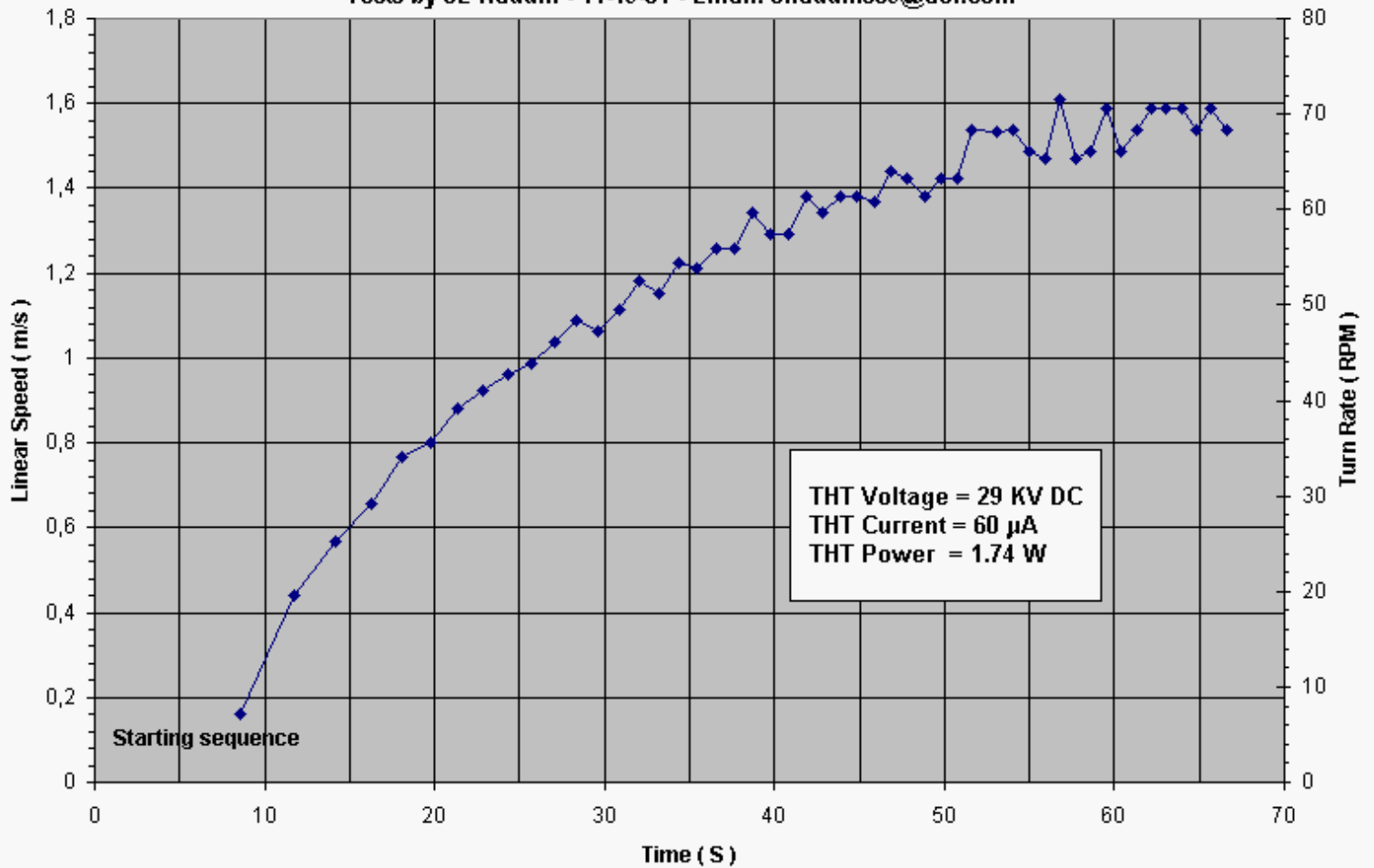
When the HV power supply is switched on, the Two Dimensional Asymmetrical Capacitor Thruster begins to rotate and accelerates quickly to a high speed. The first test has been conducted with the basic 30 KV DC pulsed power supply that I have used for the Basic Lifter experiment. See [the detailed diagram of this basic 30 KV power supply](#).

During some other tests conducted with an enhanced power supply, the average voltage measured was 24 KV DC and the current 51 μA at 10 KHz. All the parasitic leakage current has been removed by using insulated wires, so this explains the low value of the current required for getting the effect. The High Voltage Power required for a full speed rotation (65 RPM) was only 1.22 Watts...

The test curve below has been done at 29 KV DC @ 60 μA (1.74 W) :

The NASA Two Dimensional Asymmetrical Capacitor thruster - Linear Speed and RPM Curve

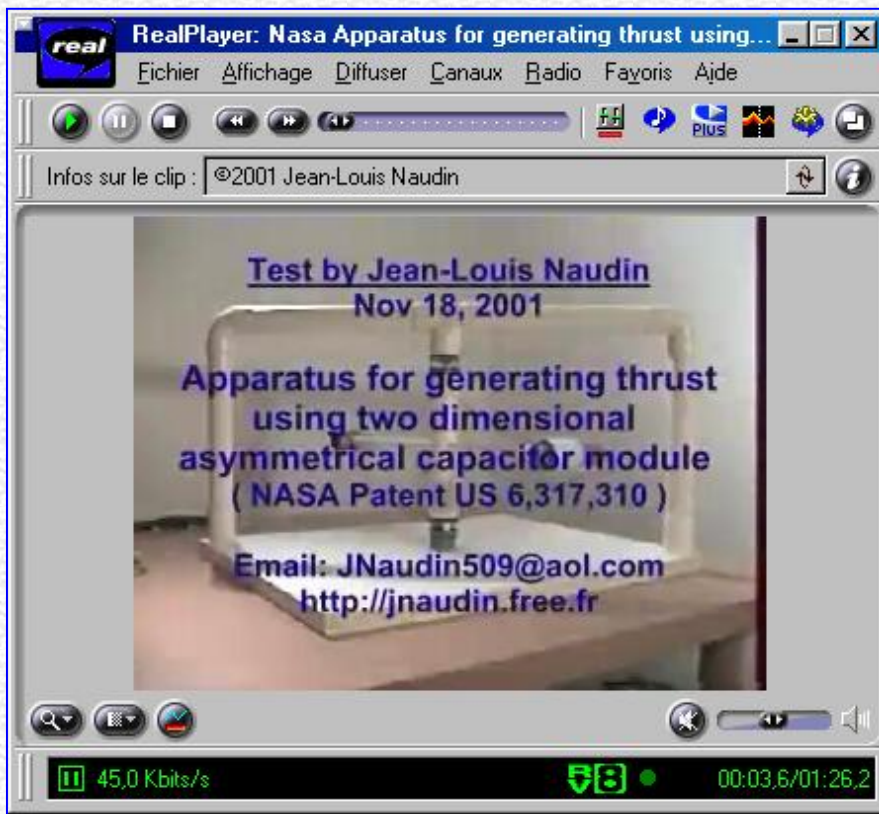
Tests by JL Naudin - 11-19-01 - Email: Jnaudin509@aol.com



[See the video of Two Dimensional Asymmetrical Capacitor Thruster experiment](#)

To see the videos, the free downloadable RealPlayer is required



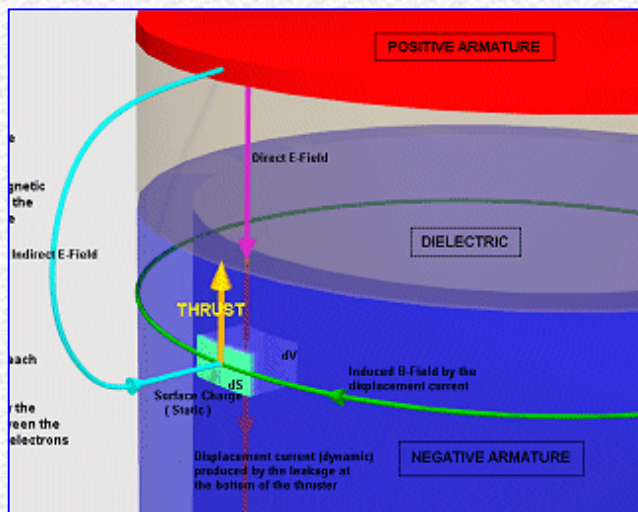


[Click on the picture above to see the video \(846 Kb \)](#)

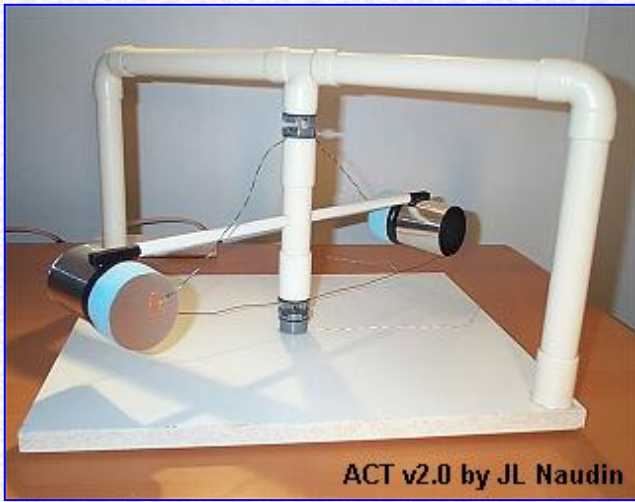
Documents references :

- [The Transdimensional Technologies](#) web site
- [Read the NASA Patent description](#) and see the **FULL NASA PATENT US 6,317,310** (**granted November 13, 2001**)
[NASA MFS 31419_1 - Apparatus & Method for Generating Thrust Using a Two Dimensional, Asymmetrical Capacitor;](#)
- [General Specification of KAPTON[®] polyimide film](#) by *Goodfellow*

See also :



The ACT Working principle proposal by *JL Naudin*



The **A**symmetrical **C**apacitor **T**hruster v2.0

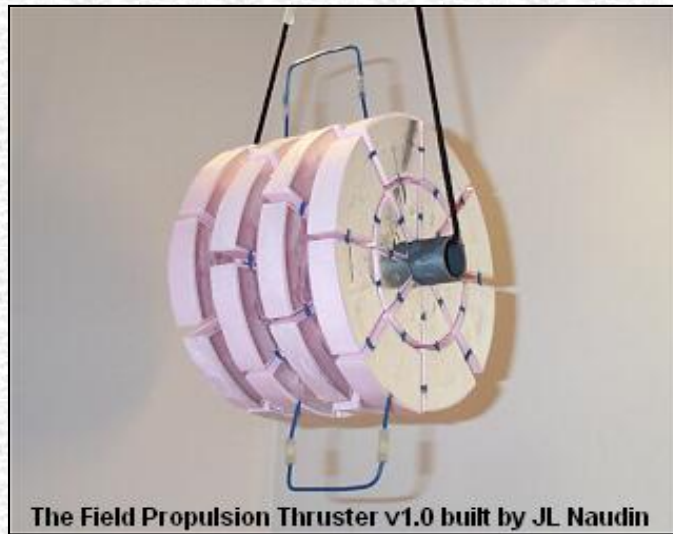


The **A**symmetrical **C**apacitor **T**hruster v3.0

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The Field Propulsion Thruster v1.0 built by JL Naudin

The Serrano's Field Propulsion Thruster SFPT v1.0



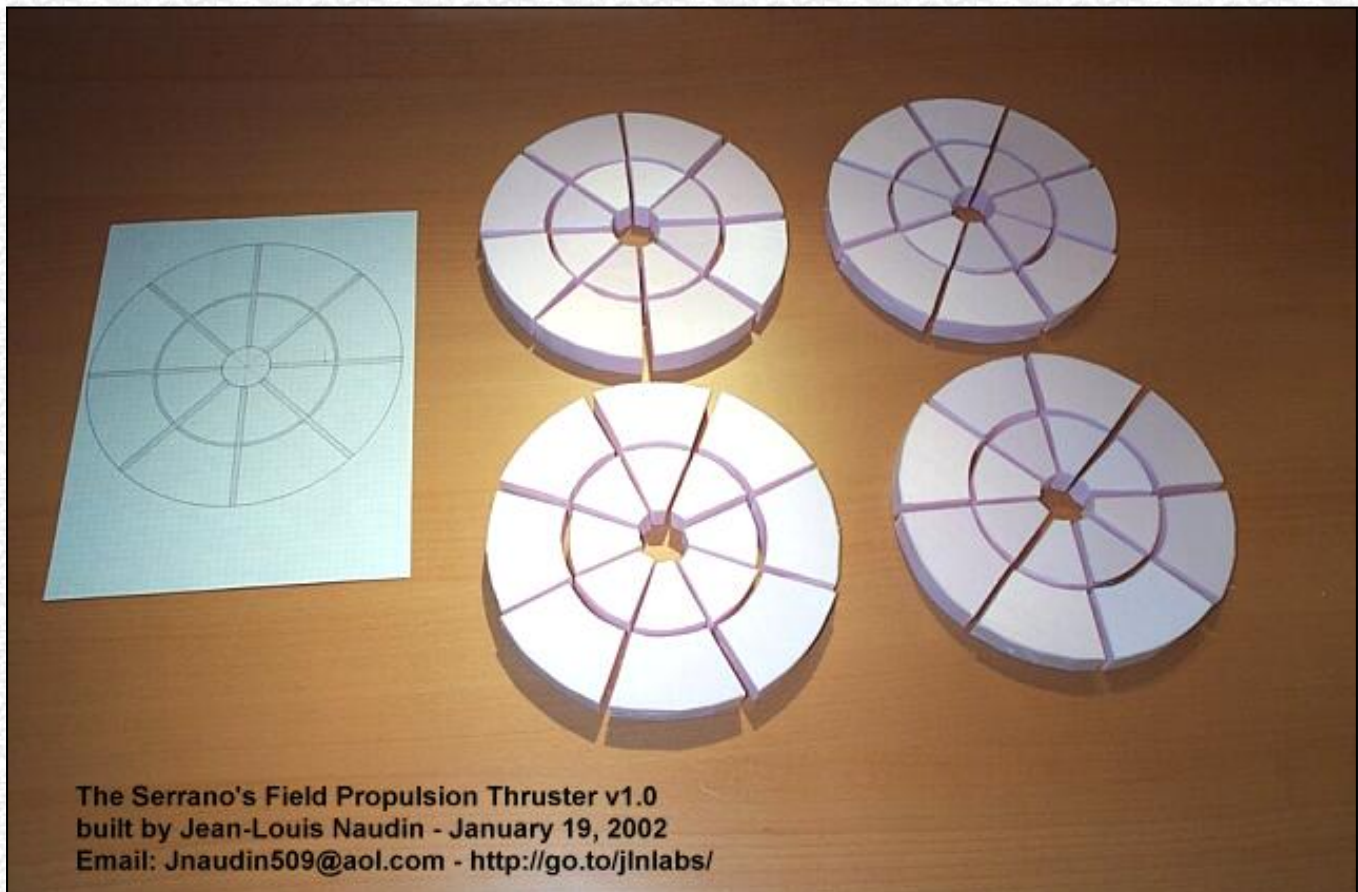
CONSTRUCTION DETAILS

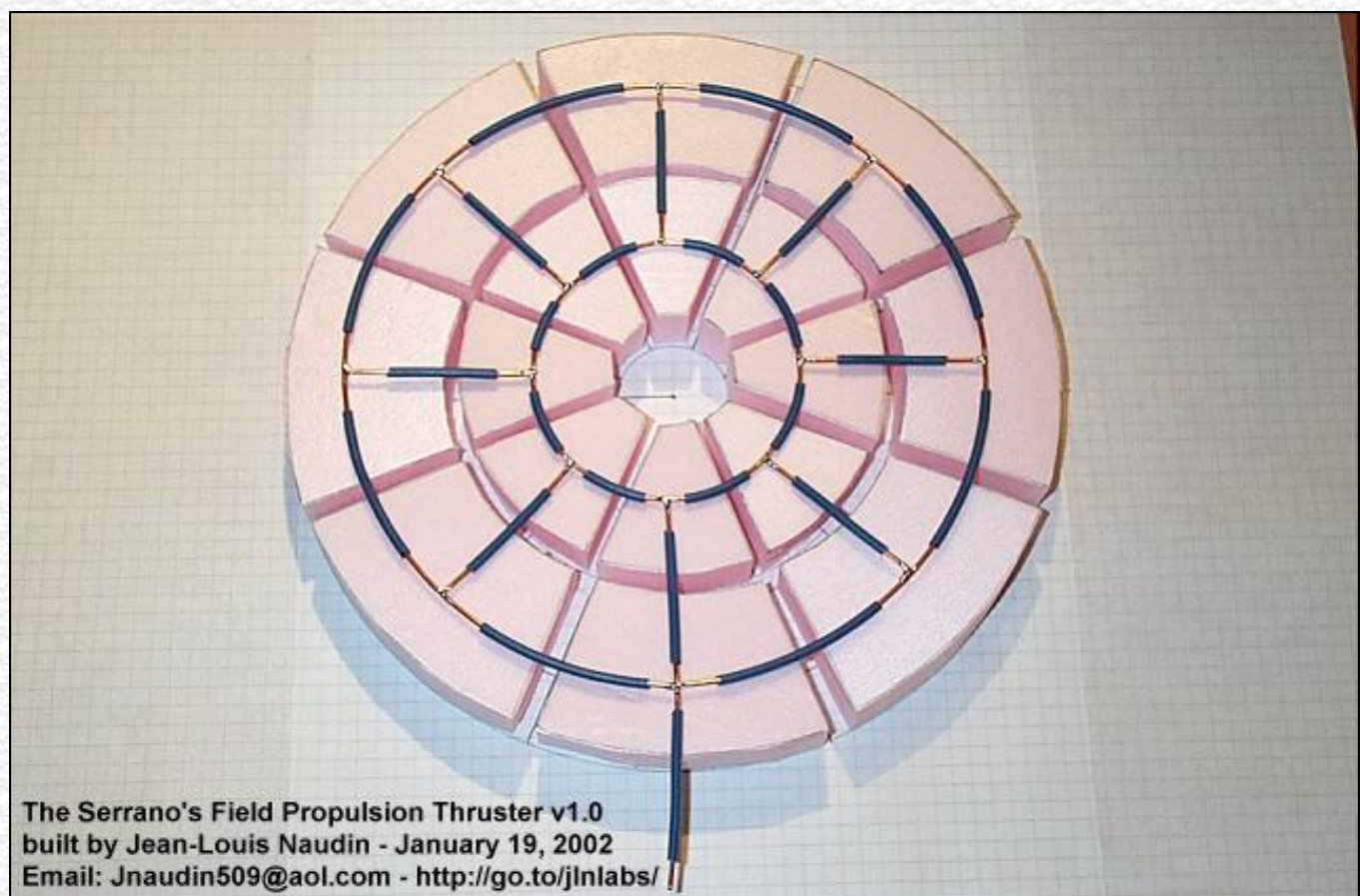
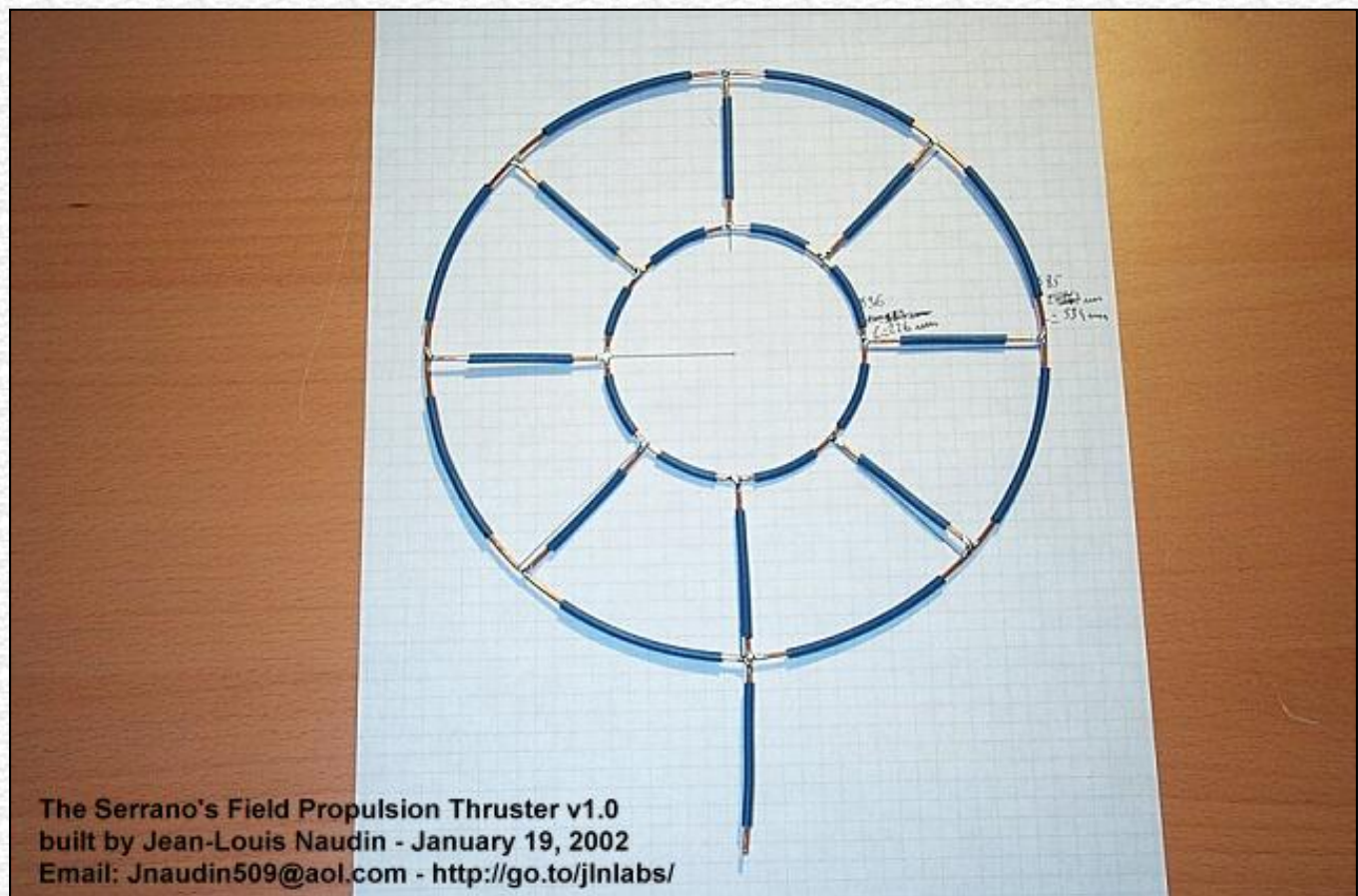


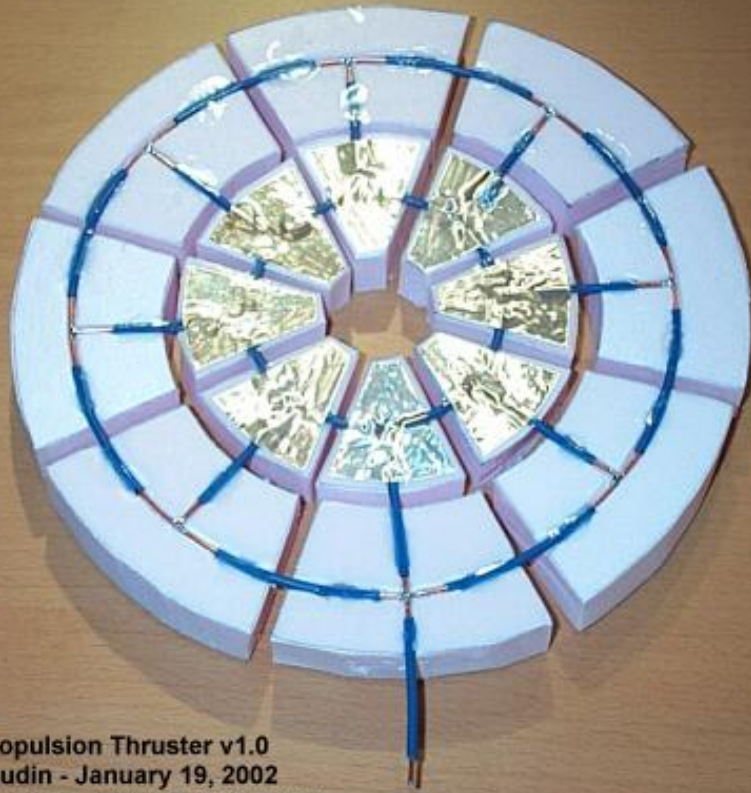
By Jean-Louis Naudin

created on January 19, 2002 - JLN Labs - Last update January 19, 2002

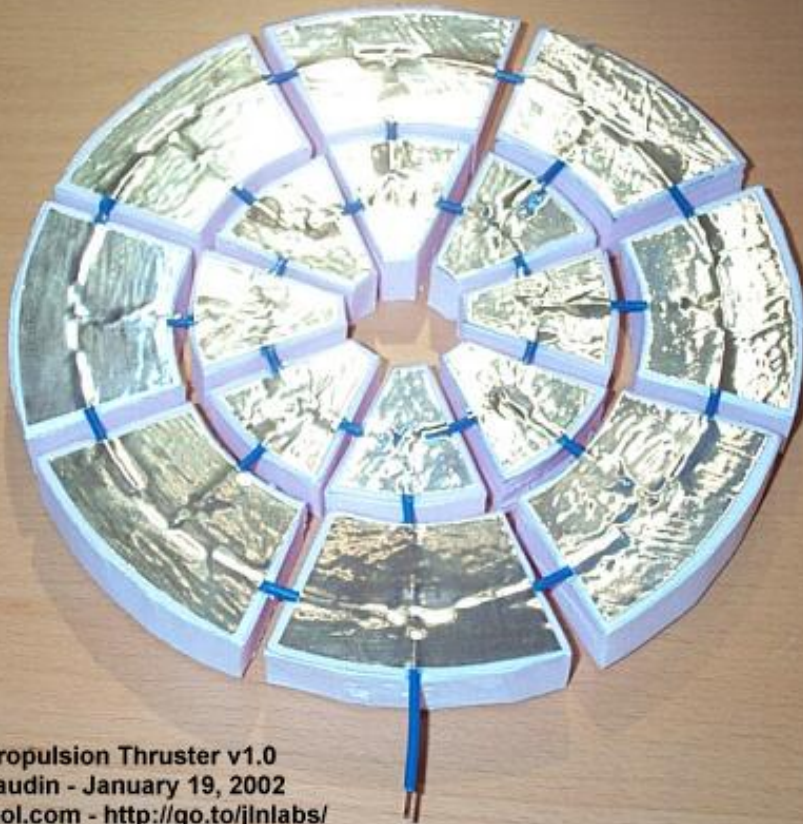
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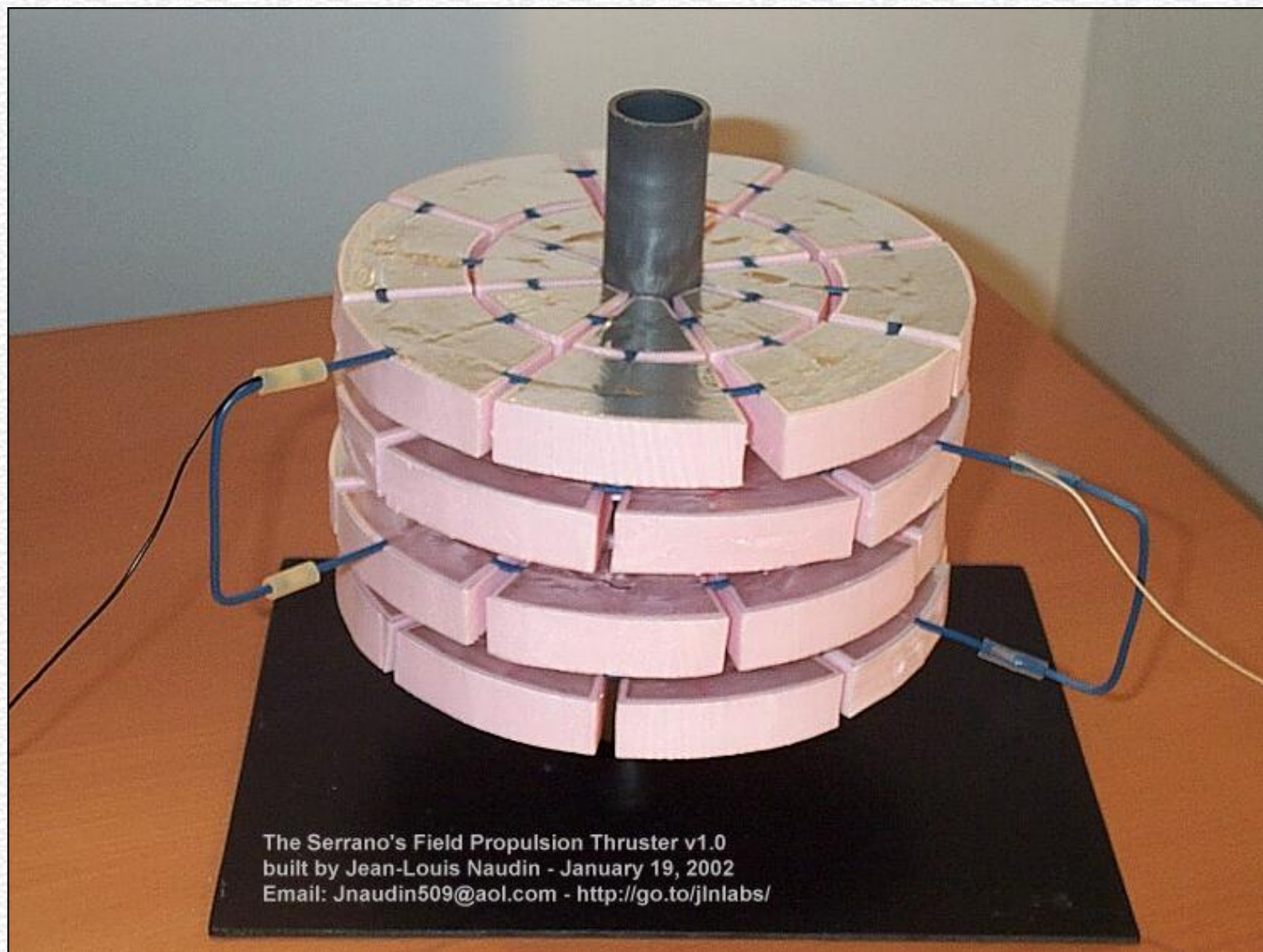




The Serrano's Field Propulsion Thruster v1.0
built by Jean-Louis Naudin - January 19, 2002
Email: Jnaudin509@aol.com - <http://go.to/jlnlabs/>

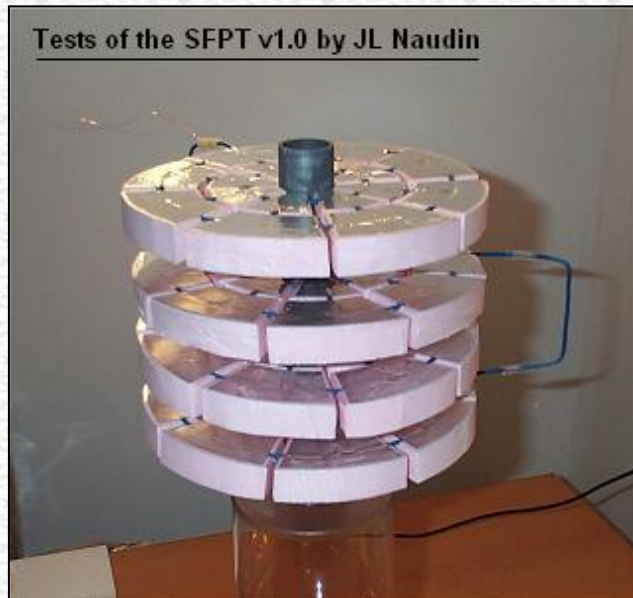


The Serrano's Field Propulsion Thruster v1.0
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The Serrano's Field Propulsion Thruster **SFPT v1.0 measurements**

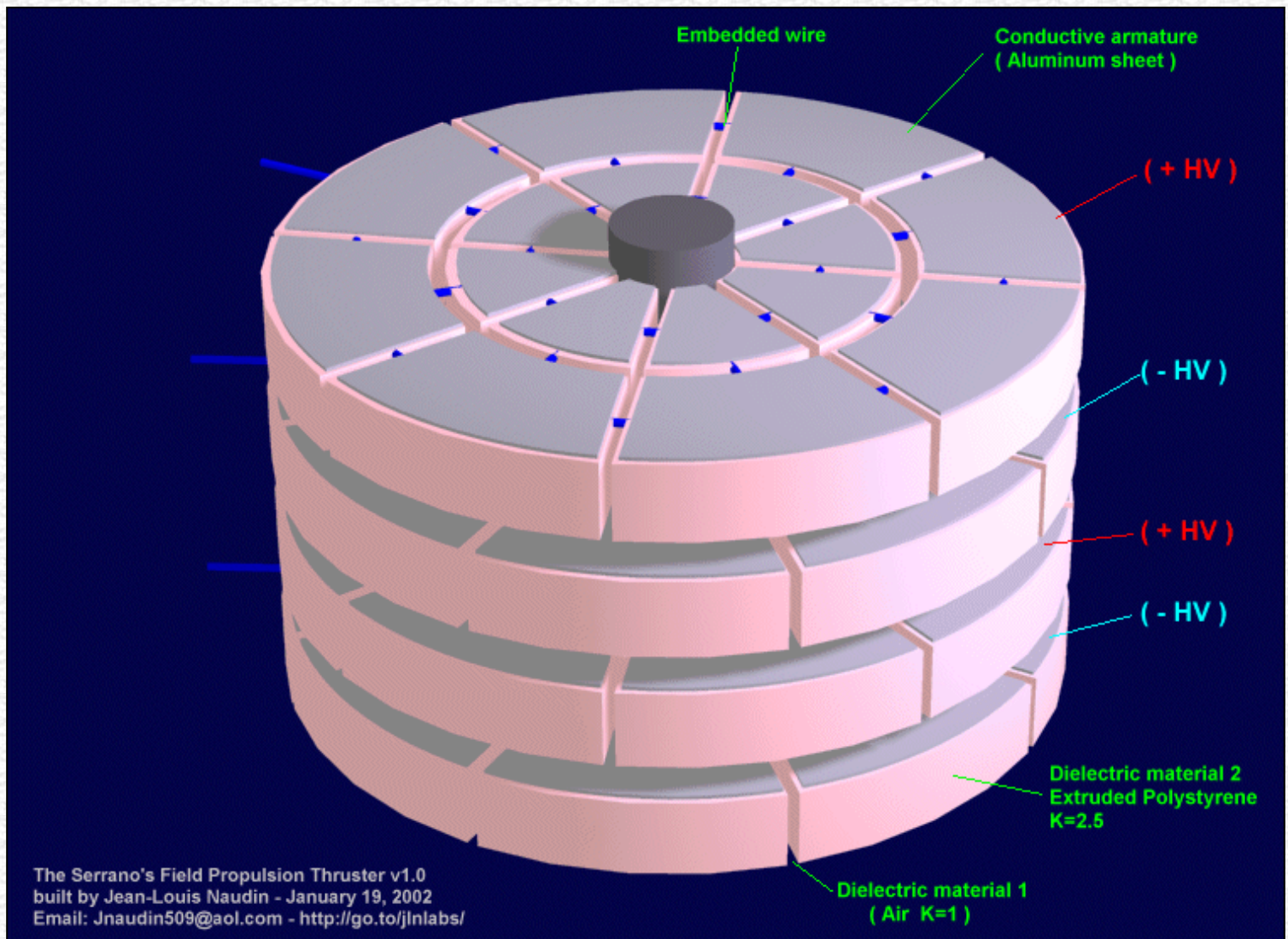
Built and tested by Jean-Louis Naudin

*created on January 19, 2002 - **JLN Labs** - Last update February 19, 2002*

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On October 5, 2000, the Hector Serrano's patent [WO 00/58623](#) " *Propulsion device and method employing electric fields for producing thrust* " has been granted. I have already built and tested successfully ([on January 19, 2002](#)) this Electric Field Propulsion device patented by Hector Serrano from [Gravitec Inc.](#)

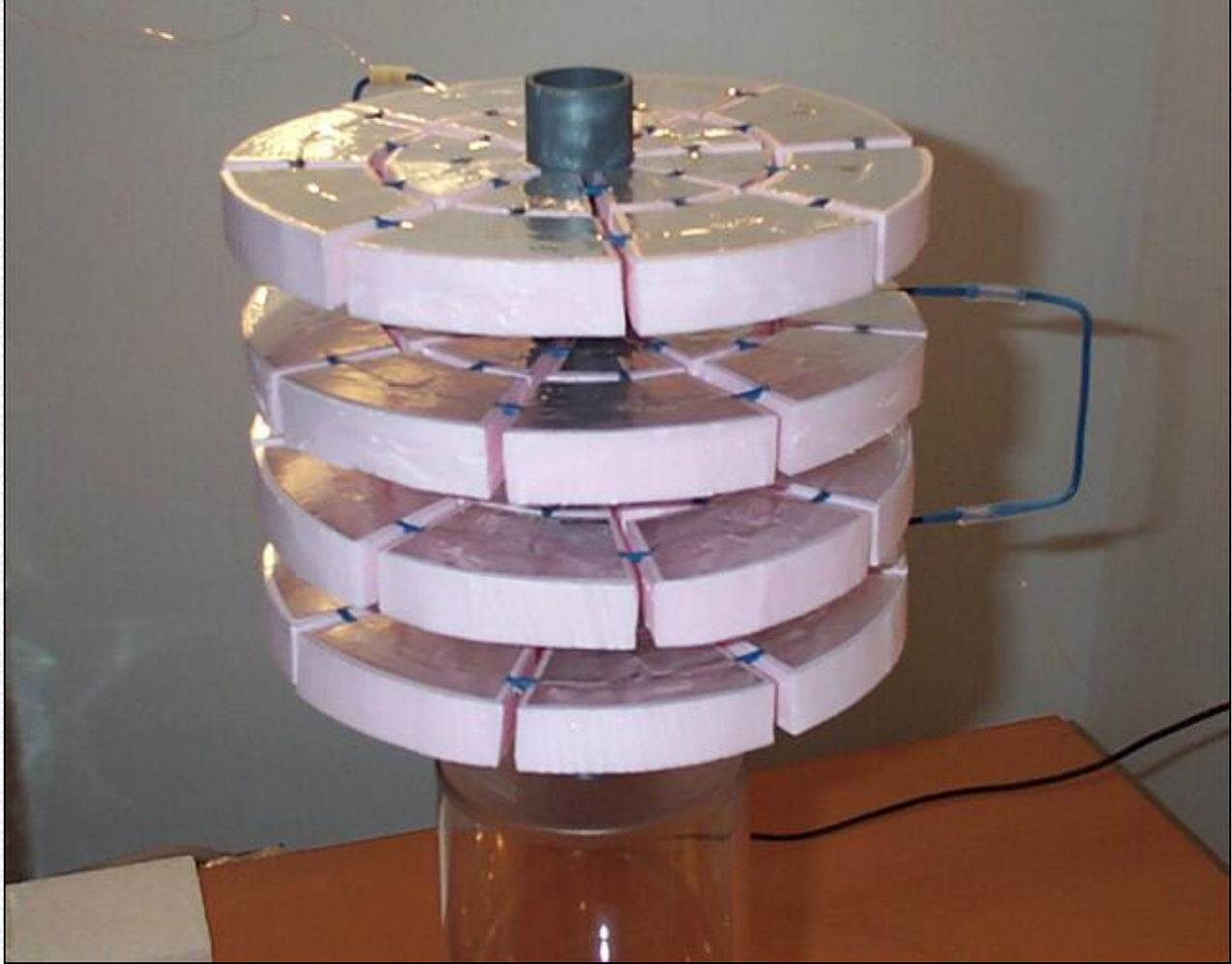
Today I have done some additional tests and measurements about the LFPT thrust versus the Voltage.



The Serrano's Field Propulsion Thruster v1.0 specifications

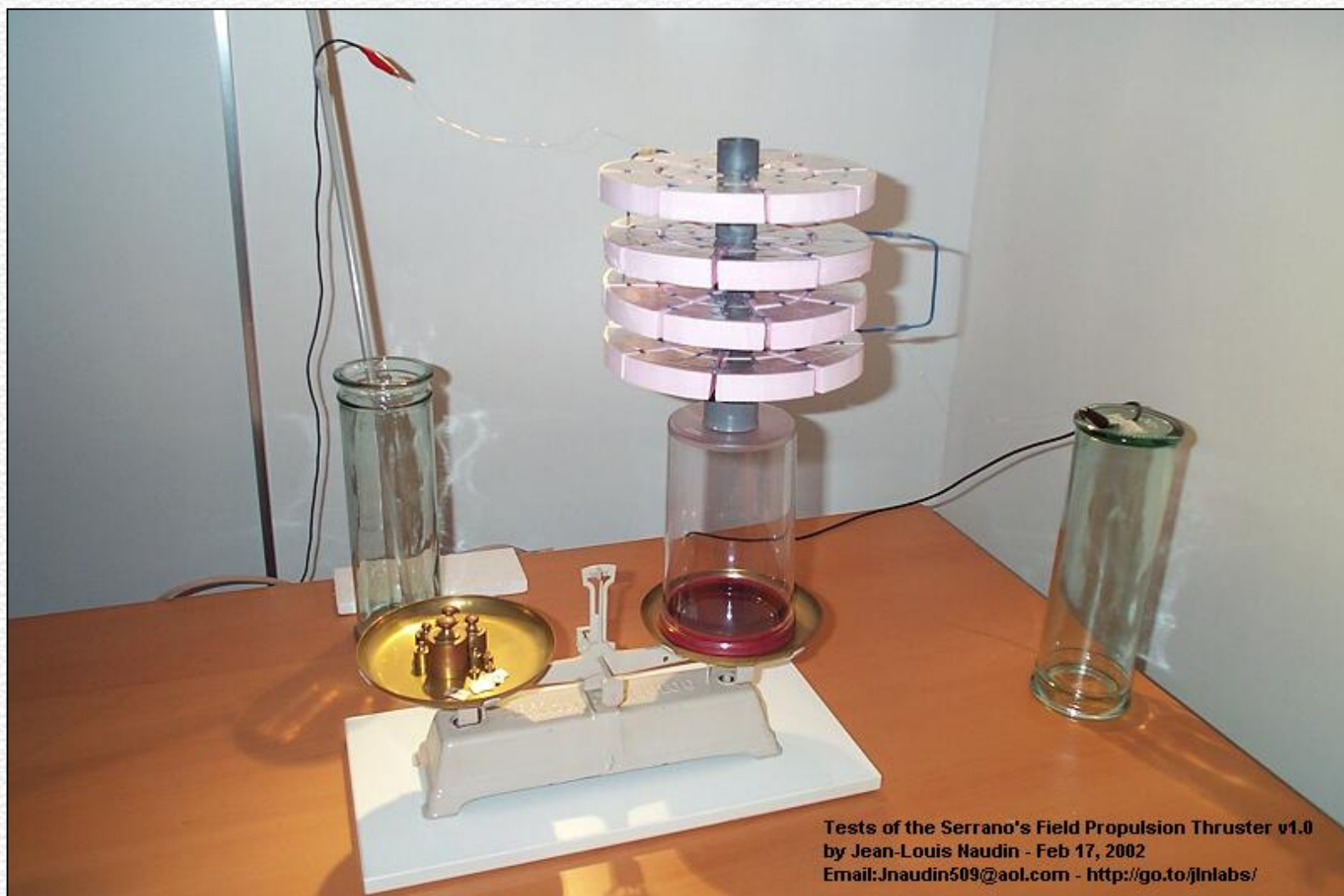
- Conductive Armatures :
- Aluminum sheet
- Dielectric material #1 :
- Air, $K=1$, Dielectric strength = $3e6$ V/m
- Dielectric material #2 :
- Extruded Polystyrene (Polyfoam XPS),
- thickness = 20 mm, $K=2.53$, Dielectric strength = $24e6$ V/m
- Total Weight : 268 g
- Main diameter : 210 mm
- Height : 130 mm

Tests of the Serrano's Field Propulsion Thruster v1.0
by Jean-Louis Naudin - Feb 17, 2002
Email: Jnaudin509@aol.com - <http://go.to/jlnlabs/>



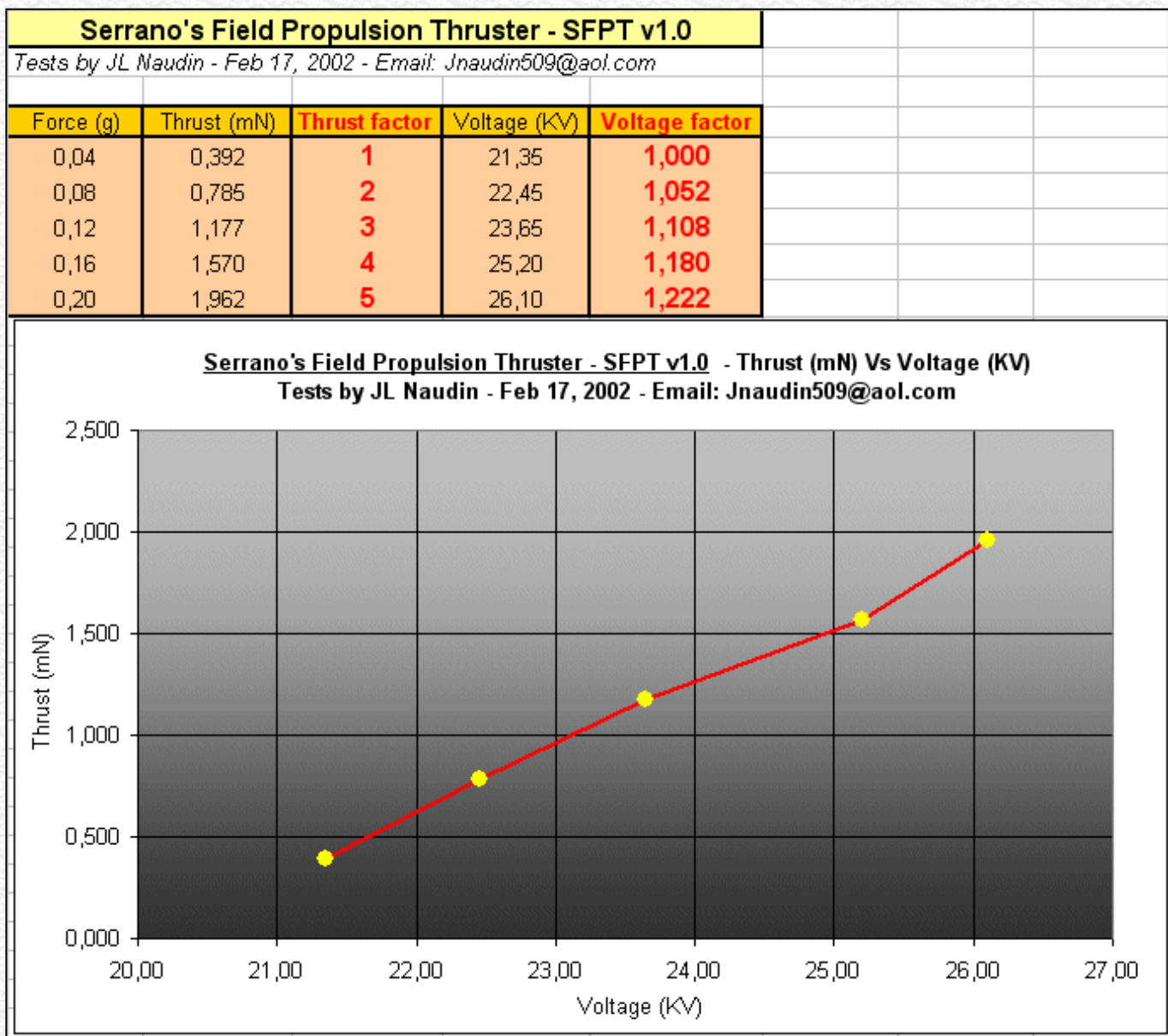
Tested apparatus description :

The SFPT v1.0 is placed vertically on a Roberval balance and fully insulated with a cylinder plastic box has shown in the photo below. The High Voltage (bipolar) is sent through thin wires coming from the top and the bottom.



TESTS RESULTS (02-17-02) :

When the HV power supply is switched on, the Field Propulsion Thruster v1.0 goes upward. Five points have been recorded, see below :



Comments : The resulting thrust is weak, this is due to the low dielectric constant difference producing a weak non-linearity between the two dielectrics used in this experiment ($K=2.53$ for the Polyfoam XPS and $K = 1$ for the Air).

Look at the columns Thrust Factor and Voltage Factor in the spreadsheet above. The most important point to notice in this experiment is :

When the voltage is 1.22 more the resulting thrust is multiplied by 5.

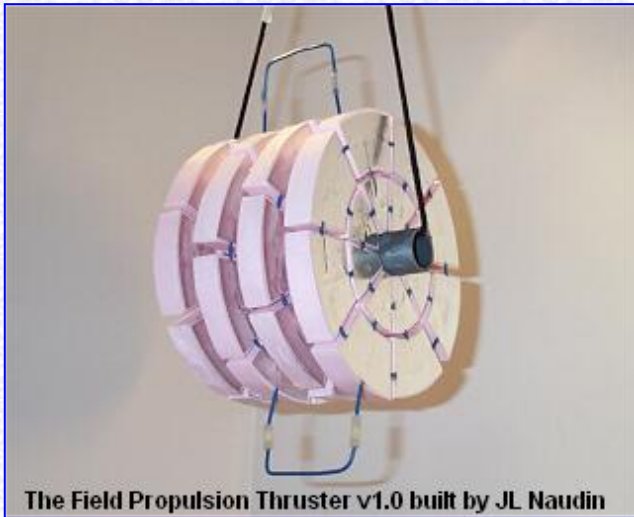
I have noticed during the measurements of the thrust on a beam balance that the Force was greater at the beginning of the test than after a while. This was effectively due to the ionization effect between the layers. The air used as the low dielectric was initially neutral and non conductive and at the end of some tests became ionized due to the presence of nitrogen oxides and ozone. The result was that the thrust became weaker at the end of the test due to the losse of the non-linearity. The thrust is greater and permanent with the rotating version. In the rotating version the non linearity is kept because the air used as the dielectric is constantly changed by the motion of the device.

SFPT v.10 demo
by JL Naudin
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Some documents references :

- Patent [WO 00/58623](#) (Oct 5, 2000) " Propulsion device and method employing electric fields for producing thrust " from H. Serrano.
- [GB Patent N°300311 filed on Nov 15, 1928](#) "A method of and an apparatus or machine for producing force or motion" from T. Townsend Brown
- NASA patent [US 6,317,310](#) (Nov 13, 2001) "Apparatus and Method for generating a thrust using a two dimensional asymmetrical capacitor module"
- AIAA-2001-3659 (*withdrawn*) - Anomalous Electrical Field Force Generation Experiment by H. Serrano, Gravitec, Inc., Kissimmee, FL; W. Hammond, NASA Marshall, Huntsville, AL; J. Rusek, Purdue Univ., West Lafayette, IN
- Link to the [Gravitec, inc web site](#).
- [Electrokinetic Propulsion: The Ionic Wind Argument](#) by William B. Stein - Purdue University - Energy Conversion Lab
- [The " Electrick Rocket " - Capacitor array, Gravity warp drive](#) from Tom Kennedy
- [The " Electrick Rocket " \(Original document with additional datas, August 1991 \)](#) from Tom Kennedy ([gravcap.zip](#))
- [FR Patent N°2651388 "Isolated systems self-propelled by electrostatic forces"](#) by Lafforgue Jean-Claude - March 1, 1991
- [Dielectric constant reference guide](#)

See also :



[The Serrano's Field Propulsion Thruster v1.0](#)

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[!\[\]\(919a2cb85b99741a73c0c31a427236a8_img.jpg\) Cliquez ici pour la version Française !\[\]\(c9cd5a1c35167a83f09a35036fe5dcbd_img.jpg\)](#)

created on October 10th, 2001 - JLN Labs - Last update March 27, 2004

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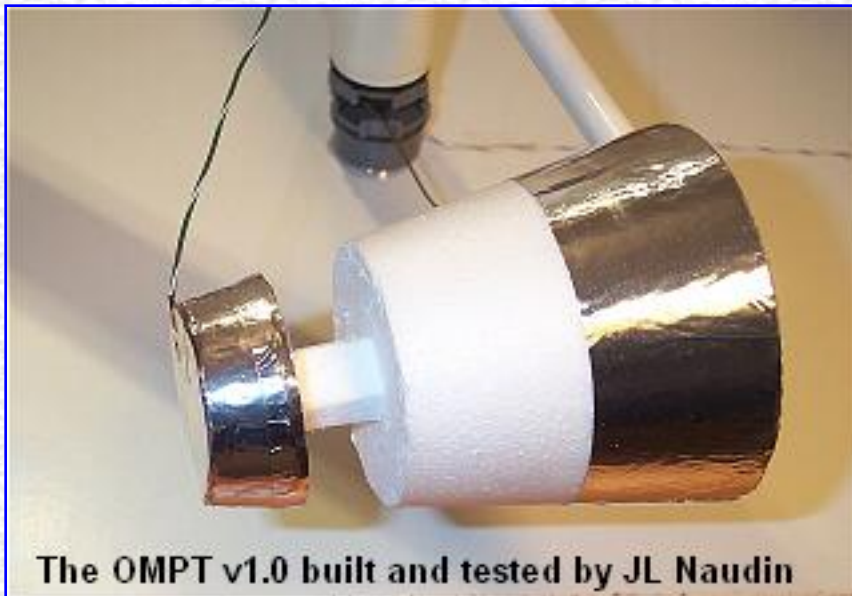
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[The NASA Two Dimensional](#)

[Asymmetrical Capacitor Thruster](#)

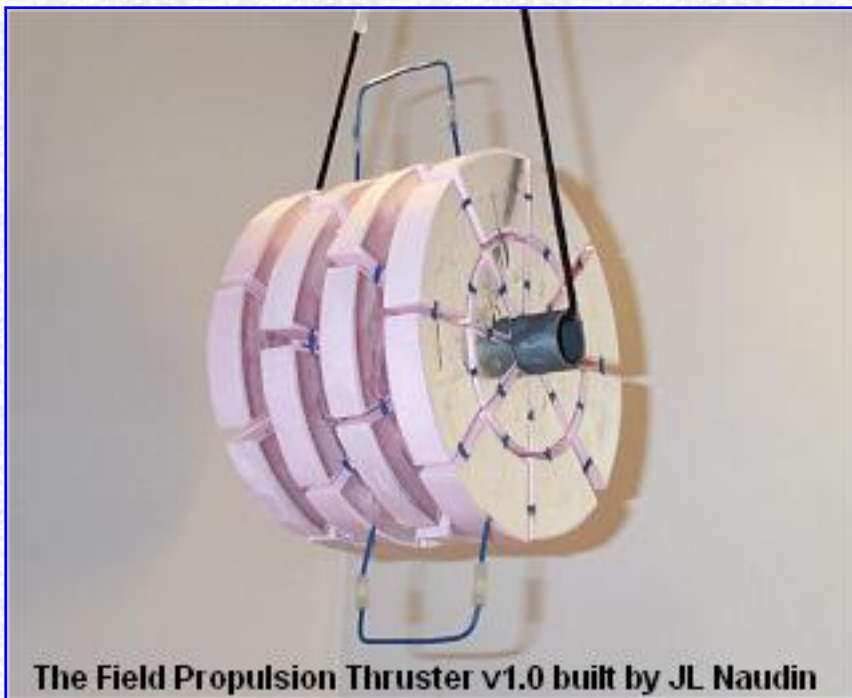
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The NASA Orbital

Maneuvering Propellantless Thruster v1.0

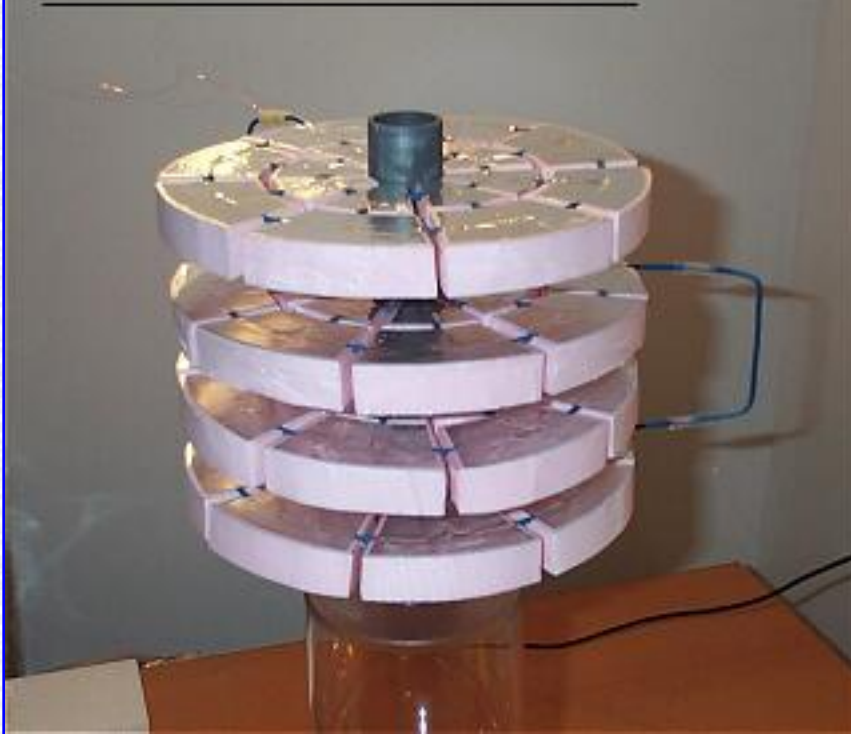
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The Serrano's Field Propulsion

Thruster v1.0

Tests of the SFPT v1.0 by JL Naudin



The SFPT v1.0 : Tests and

measurements



The Brown-Bahnson

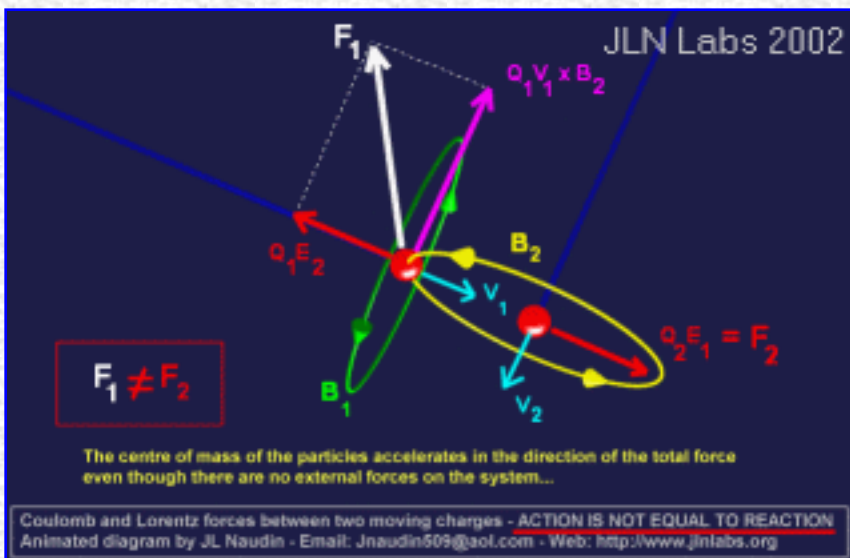
Saucer v2.0



The Brown-Bahnson saucer by JL Naudin

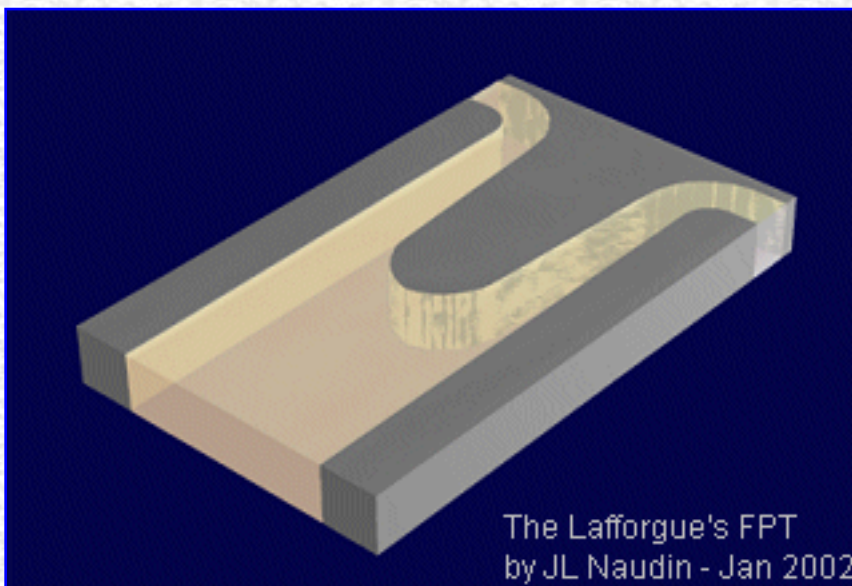
Saucer v1.0

The Brown-Bahnson



ACTION ≠ REACTION

Brainstorming : Lorentz Force,



The Lafforgue's FPT
by JL Naudin - Jan 2002

The Lafforgue's Field

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