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Thunder Energies Corporation (TEC, a Florida based new company whose stock has recently initiated trading Over the Counter with symbol TNRG (http://www.otcmarkets.com/stock/TNRG/quote), has been organized for the production, sale and service of new technologies developed by TEC Chief Scientist, Dr. Ruggero Maria Santilli (CV: http://www.world-lecture-series.org/santilli-cv) following fifty years of research at some of the most prestigious universities, including Harvard University, MIT, Boston University and others. In this presentation we outline the industrial development of Dr. Santilli's discoveries in optics. Those in nuclear physics and fuel combustion are outlined in corresponding presentations.

TEC DIVISION OF OPTICAL INSTRUMENTS (TEC-DOI)

1. Historical Notes

When studying for his Ph. D. in physics at the University of Turin, Italy, in the mid 1960s, the Italian American scientist Dr. Ruggero Maria Santilli (CV: http://www.world-lecture-series.org/santilli-cv) decided to ascertaining whether a far away galaxy was made up of matter or of antimatter and, in this way, initiated a fifty year long scientific journey.

As a first step, Dr. Santilli proved that none of the 20th century mathematics, physics and optics were applicable for a classical study of antimatter, because the annihilation of matter and antimatter into light (when in contact with each other) requires a conjugation of all physical characteristics in the transition from matter to antimatter. Such a conjugation was absent in all 20th century sciences, since they were specifically built to treat matter.

As an example, Einstein special and general relativities were conceived decades before the discovery of antimatter and, therefore, they were unable to represent matter-antimatter annihilation. Also, far away antimatter stars and galaxies have to be assumed as being neutral, thus implying the complete "inapplicability" (and not the "violation") of Einstein theories for the study of antimatter, since said theories only had the sign of the charge for conjugation.

In the early 1980s, Dr. Santilli became a member of the Department of Mathematics at Harvard University under DOE support . During this period, Dr. Santilli constructed a new mathematics via a conjugation (technically known as anti-Hermiticity and called Santilli IsoDuality) of conventional mathematics that was suitable for the "classical" description of "neutral" (or charged) antimatter bodies.

Physical applications of conventional mathematics are based on positive units (such as +1 sec, +1 meter, etc.). In order to conjugate from neutral matter to neutral antimatter, Dr. Santilli constructed his new mathematics based on negative units (such as -1 sec, -1 meter, etc.). Since the charge cannot be used for conjugation of neutral bodies, Dr. Santilli achieved a consistent representation of antimatter by conjugating all physical characteristics of matter, such as mass, energy, angular momentum, etc. and by conjugating for consistency also their units.

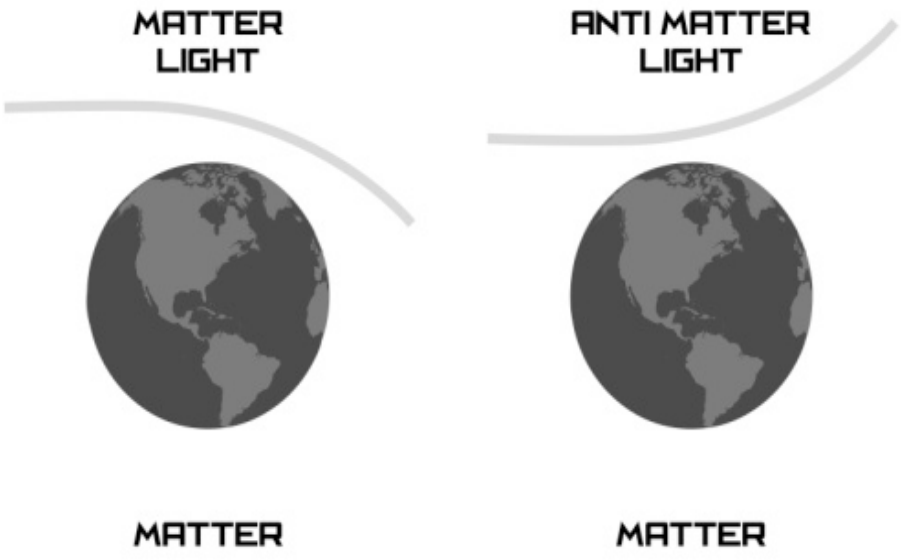

Fig. 1. *The repulsion of antimatter light by a matter gravitational field which is a consequence of the classical conjugation of neutral matter into antimatter.*

Dr. Santilli then spent decades of studies for the construction of the isodual image of the main aspects of 20th century mathematics, including the conjugation of number theory, functional analysis, differential calculus, symmetries, etc. The new mathematics has such a form as to admit negative left and right units at all levels (see the mathematical memoir[1] listed below). The resulting new mathematics is today known as Santilli IsoDual Mathematics (see monograph [2] for a comprehensive presentation up to 2006 with a list of preceding publications in refereed scientific journals).

Following, and only following the achievement of the appropriate new mathematics, Dr. Santilli conducted decades of studies on the construction of the corresponding physical theory, today known as Santilli IsoDual Theory of Antimatter, which includes the isodual image of all main parts of 20th century physics, including the isodual image of special and general relativities, by achieving in particular the first known consistent classical representation of the gravitational field of neutral (or charged) antimatter bodies [3].

Additionally, Dr. Santilli constructed the isodual image of quantum mechanics, namely, an image of quantum mechanics compatible with isodual relativities. As a central part of the above studies, Dr. Santilli proved that the isodual theory of antimatter verifies "all" known experimental data on antimatter at both the classical and quantum levels (see also Ref. [3] of all proofs).

2. Experimental Evidence

Following, and only following, decades of research for the achievement of the appropriate mathematical and physical treats, Dr. Santilli initiated experimental test of his 50 year old dream: ascertain whether a far away star or galaxy is made up of matter or of antimatter.

In 1995, as an invited keynote speaker at the International Conference on Antimatter held in Sepino, province of Isernia, Italy, Dr. Santilli presented the historical discovery that light emitted by antimatter (called antimatter-light) is physically different than light emitted by matter (called matter-light) in an experimentally verifiable way [4]. In particular, matter-light is attracted by a matter gravitational field, while antimatter-light is repelled by a matter field, namely, it ex experiences gravitational repulsion (Figure 1).

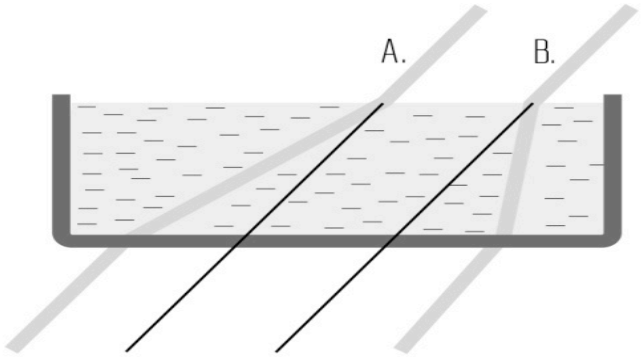

Fig. 2. *The negative index of refraction of antimatter light which is a consequence of the repulsion of antimatter light from a matter gravitational field.*

At the 2012 International Conference on Numerical Analysis and Applied Mathematics ICNAAM in Kos, Greece, Dr. Santilli presented a second historical discovery according to which, when propagating within a matter transparent medium such as glass, antimatter-light has an index of refraction opposite that of matter-light (see Ref. [5] and Figure 2). This property was derived as a consequence of the gravitational repulsion of Figure 1.

This second historical discovery established that a conventional Galileo refractive telescope cannot focus images from antimatter-stars because its convex lenses, such as a Steinheil achromatic convex doublet, will disperse antimatter-light in all directions as shown in Figure 3.

Consequently, Dr. Santilli conceived a conjugated doublet, called Santilli Achromatic Double Concave Doublet™ (international patents pending by TEC), to focus images caused by antimatter-light. Since antimatter-light has an index of refraction in glass opposite that of matter-light, the curvature of the lenses has to be conjugated from matter-light, that is, has to be concave (see also Figure 3 for details).

In this way, Dr. Santilli established that none of the available telescopes can focus images of antimatter stars or galaxies because they are all based on the conventional law of refraction and related convex lenses. Consequently, images from far away antimatter stars or galaxies are

dispersed in all directions by convex lenses without any focusing. Similarly, concave lenses will disperse in all directions images from mater-light but they will converge images from antimatter-light.

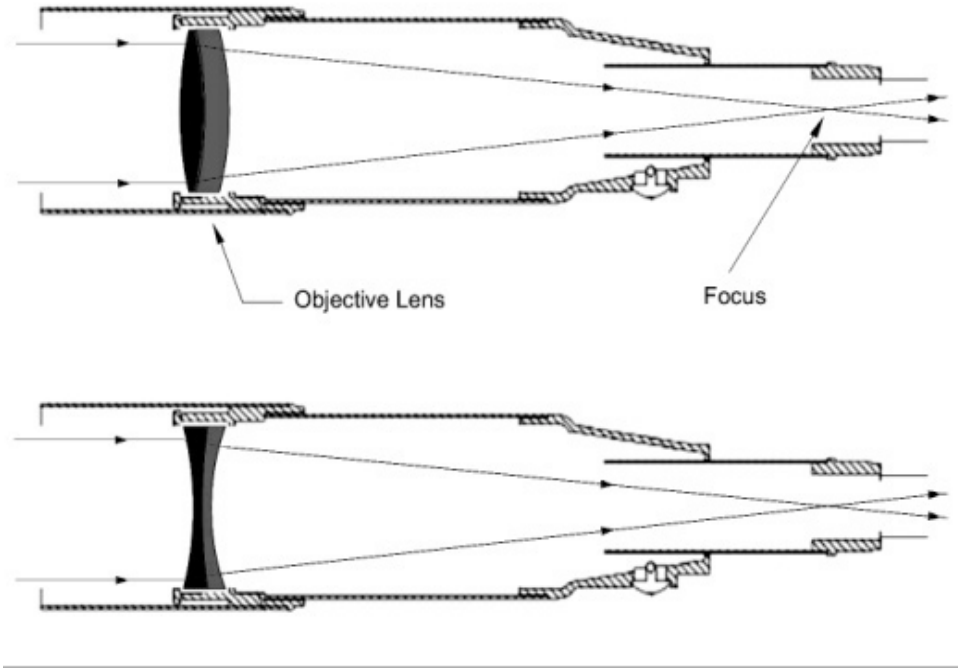

Fig.3. A schematic bview opf the Galileo (top) and the Santilli telescope (bottom) based on the regfractions of Figure 2.

Dr. Santilli also proved that we will never see antimatter images with our eyes because our iris is convex, thus dispersing antimatter-light all over our retina without any focused view.

In 2012, Dr. Santilli constructed the first telescope with concave lenses, today known as Santilli Refractive Telescope™ (see Figure 4), thanks to the assistance of companies from India and China, and conducted systematic views of the night sky in the region of the Vega star, by achieving the first detection in scientific history of antimatter galaxies, antimatter cosmic rays and antimatter asteroids (see Ref. [6] and figures below). The above historical discovery has been confirmed twice by independent scientists (see Refs. [7] and [8].

In conclusion, it took fifty years of mathematical, theoretical and experimental research for Dr. Santilli to provide an answer to his question of the mid 1960s, with the conclusion that: 1) All galaxies we see in the universe with the various available telescopes are solely made up of matter; 2) There exist indeed antimatter galaxies in the universe, but they are solely visible via special telescopes with concave lenses; and 3) We will never be able to focus images of antimatter with our eyes because our iris is convex.

3. TEC-I Industrial Program

Since all the necessary background research has been completed, TEC-DOI plans to advertise Santilli telescopes world wide, and initiate its production, sale and service in three models with

100 mm, 200 mm and 300 mm primary achromatic biconvex lenses.

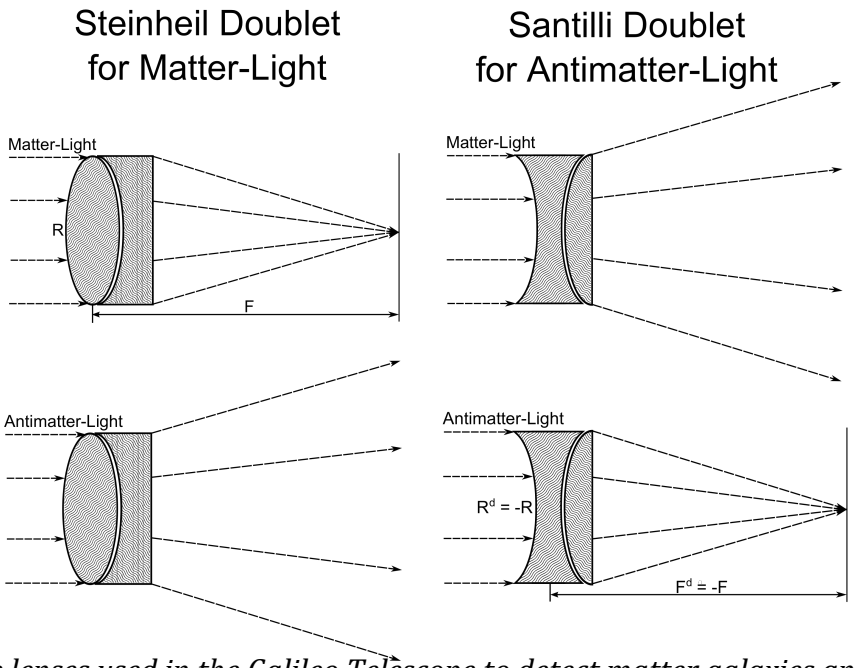

Fig 4. A view of the lenses used in the Galileo Telescope to detect matter galaxies and their conjugate veron used in the Santilli Telescope to detect antimatter galaxies (trademark and patent pending).

It should be noted that the Santilli telescope has to be sold in pair with an equivalent Galileo telescope. The latter is necessary to identify with precision the observed region of the night sky since no conventional optimal alignment is possible with the Santilli telescope. Additionally, the joint availability of the Galileo telescope is important to verify that, to be acceptable detection of antimatter, all images in the Santilli telescope do not exist in the Galileo telescope, and vice versa.

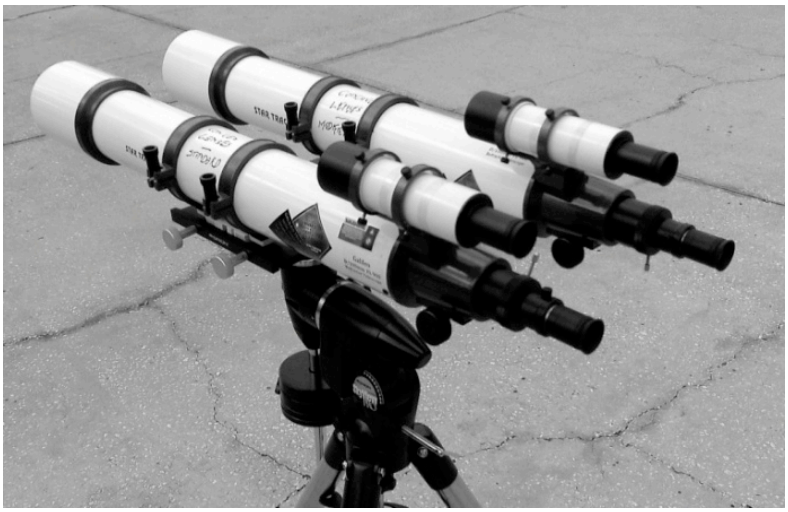

Fig. 5. Sample of a pair of 100 mm Galileo and Santilli Telescopes under production and sale organization by TEC-DOI jointly with larger 200 mm and 300 mm versions. A detailed business plan, including marketing and financial forecasts, is available on request.

Additionally, TEC-DOI plans to advertise, produce and sell optical equipment that converts conventional Galileo telescopes into Santilli telescopes as depicted in Figure 5 (international patents pending). This conversion is important because there exists a large number of telescopes both on Earth as well as in orbit for the detection of matter and their conversion to antimatter is manifestly relevant.

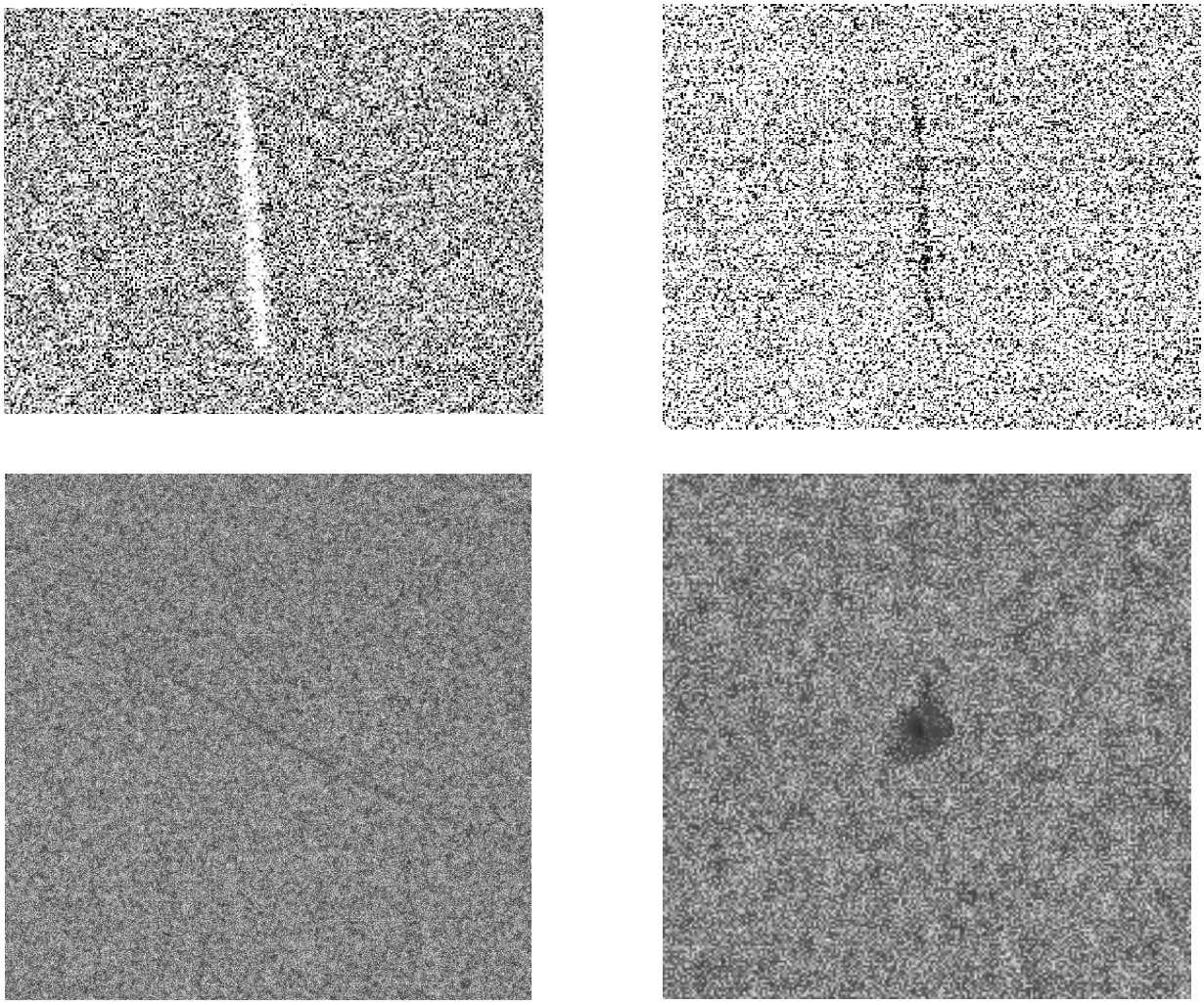

Fig. 6 and 7. Samples of images detected in the pair of Galileo and Santilli Telescopes (see the scientific papers for details): streak of light from a matter galaxy detected in the Galileo but not in the Santilli telescope (top left); sample of streak of darkness from an antimatter galaxy detected in the Santilli telescope but absent in the Galileo telescope (top right); sample of streak of darkness solely present in the Santilli telescope due to a small antimatter asteroid annihilating in our upper atmosphere (bottom left); and a dot of darkness detected in the Santilli telescope but absent in the Galileo telescope due to antimatter cosmic rays annihilating in the upper atmosphere 9bottom right),

The market of the above described optical instruments are expected to be composed of individual astronomers, astrophysical laboratories, specialized industries and military installations.

It should be noted that, as described in details in Ref. [9], antimatter asteroids constitute a serious threat to our security since the annihilation in our atmosphere of an antimatter asteroids even of the size of a football may disable civilian, industrial and military communications for days. This is due to the fact that matter and antimatter annihilates into high energy radiations that excite our atmosphere, thus preventing communications.

Consequently, TEC plans to approach the U.S. Military to inquire as to whether there is an interest in funding comprehensive research for the advance detection of antimatter asteroids whose study can itself produce new cutting edge technologies.

Finally, TEC-DOI plans to promote the direct experimental verification of antigravity experienced by antimatter in the field of matter via the measurement of the gravity of very low energy positron in horizontal flight in a supercooled and supervacuum tube, as proposed by Dr. Santilli in the 1990s (see the comprehensive prediction in monograph [2]) and confirmed as being resolute by independent scientists [8,9]. A formal experimental proposal is available in Ref. [10].

Dr. Santilli's detection of antimatter galaxies is the first experimental, verification of antigravity between matter and antimatter because the focusing of images via concave lenses necessarily implies a negative index of refraction (Figure 2) that, in turn, implies the repulsion of antimatter-light by a matter field (Figure 1). However, the scientific and technological implications of a direct verification of antigravity for masses are so huge to warrant its implementation.

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NEWS RELEASES ON THE MYSTERY OF ANTIMATTER

PRWeb News release
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Report
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Confirmed at the Sorbonne University, France
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Report
http://www.santilli-foundation.org/docs/PRWeb-16.pdf

PRWeb Release
Apparent Detection of Antimatter Galaxies via Santilli's Telescope with Concave Lenses
Announcement
http://www.prweb.com/releases/2014/02/prweb11589410.htm
Report
http://www.santilli-foundation.org/docs/Apparent-detect.pdf

PRWeb Release
Studies for the Detection of Antimatter Asteroids Promoted
by the R. M. Santilli Foundation
http://www.prweb.com/releases/2013/9/prweb11118385.htm
Report
http://www.santilli-foundation.org/docs/Studies-antimatter.pdf

PRWeb Release
Scientists Confirm Santilli Detection of Antimatter Galaxies, Cosmic Rays and Asteroids
Announcement
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