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Confirmation of Santilli's detection of antimatter galaxies via a telescope with concave lenses

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Abstract: Following decades of mathematical, theoretical, and experimental research on antimatter, recent results have announced the apparent detection of antimatter galaxies, antimatter asteroids and antimatter cosmic rays via the use of a new telescope with concave lenses known as the Santilli telescope. This article presents results providing additional confirmations that Santilli has indeed achieved the first known detection of antimatter in the large scale structure of the universe, and identifies the main implications.

Keywords: Antimatter Galaxies, Antimatter Asteroids, Antimatter Cosmic Rays

1. Introduction

One of the biggest scientific imbalances of the 20th century was the treatment of matter at all levels, from Newtonian mechanics to second quantization, while antimatter was solely treated at the level of second quantization.

The imbalance originated from the absence in special and general relativities of a conjugation suitable for the classical transition from neutral matter to neutral antimatter as needed, for example, for quantitative studies of antimatter stars and asteroids.

Consequently, any possible extension of special and general relativities to include a classical representation of antimatter is afflicted by catastrophic inconsistencies, such as the impossibility to represent the annihilation of matter and antimatter, thus mandating the need for new relativities specifically conceived for antimatter.

Santilli has applied novel mathematical, theoretical and experimental research in antimatter [1-15] and subsequent independent works [16-28] toward the resolution of this imbalance and the treatment of antimatter at all levels, from Newtonian mechanics to second quantization in full scientific analogous application to that of matter.

To achieve these objectives at the Department of Mathematics, Harvard University under a Department of Energy (DOE) funded support in the early 1980s, Santilli first constructed a new mathematics, today known as Santilli isodual mathematics, via an anti-Hermitean map, called isoduality [1-3] and subsequent independent mathematical studies [16-19, 28].

Santilli isoduality does indeed allow a classical conjugation of neutral (as well as charged) matter into the corresponding antimatter via the isodual conjugation of all physical quantities as well as their units, thus achieving full compatibility with matter-antimatter annihilation irrespective of whether neutral or charged.

Santilli then constructed the physical theory permitted by the isodual mathematics, today known as the isodual theory of antimatter [4-15] which comprises the isodual image of 20th century physics for matter, including the isodual special relativity [7, 11] and the first known axiomatically rigorous representation of the gravitational field of antimatter bodies via the Riemann-Santilli isodual geometry [9, 11].

The resulting isodual theory of antimatter emerged as being compatible with all known experimental data on antimatter at the classical level, while at the operator level the isodual map is equivalent to charge conjugation, thus achieving compatibility with experimental data in particle physics [11].

An important prediction of Santilli's isodual theory is that the classical and operator representation of neutral antimatter implies that light emitted by antimatter stars, called antimatter light or isodual light, is different than ordinary matter light in an experimentally verifiable way [8, 11] since, lacking the charge for a conjugation, all characteristics of matter light are changed by the anti-Hermitean isoduality.

In this particular case, since we are dealing with real-valued physical quantities, anti-Hermiticity implies that antimatter light possesses negative energy which is however referred to negative units, thus avoiding the physical inconsistencies of negative energy solutions of Dirac's equation [11].

Another important prediction of the isodual theory of antimatter at all levels of study, from Newton-Santilli isodual equations to Santilli isodual special relativity and the Riemann-Santilli isodual geometry, is that matter and antimatter experience a gravitational repulsion [5, 6, 11] verified by independent works [20, 21]. Consequently, antimatter light is predicted to be repelled by a matter gravitational field [8, 11] and illustrated in Figure 1.

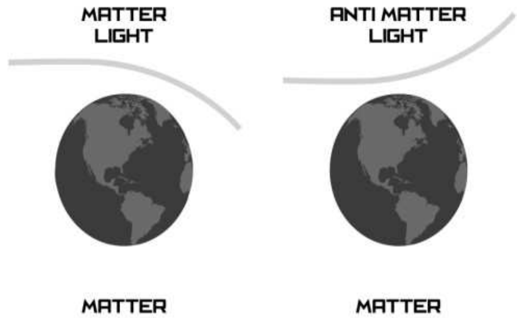


Fig. 1. The repulsion of antimatter light by a matter gravitational field which is a consequence of the classical conjugation of neutral matter into antimatter.

In turn, the repulsion of antimatter light by matter implies the prediction that antimatter light traversing a transparent matter medium has a negative index of refraction [8, 11, 13] and illustrated in Figure 2. Independently from the gravitational repulsion, the transition from a positive to a negative index of refraction is necessary for a consistent conjugation from matter to antimatter, and compatible with mater-antimatter annihilation [11].

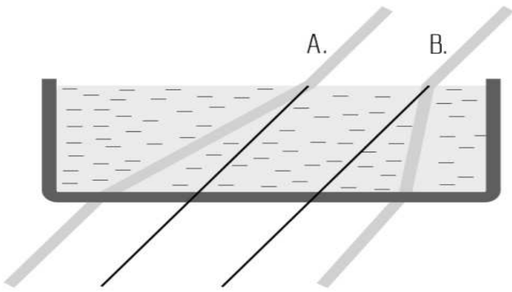


Fig. 2. Negative index of refraction of antimatter light which is a consequence of the repulsion of antimatter light from a matter gravitational field.

It should be noted that a negative index of refraction implies that antimatter light travels at superluminal speeds while traversing matter media. These superluminal speeds are unavoidable from the indicated matter-antimatter repulsion at all levels, thus including interactions between antimatter light and matter media.

The only way to focus any light with negative index of refraction is via concave lenses, namely, lenses that are conjugated with respect to the conventional convex lenses used to focus ordinary matter light [13] and illustrated in Figure 3.

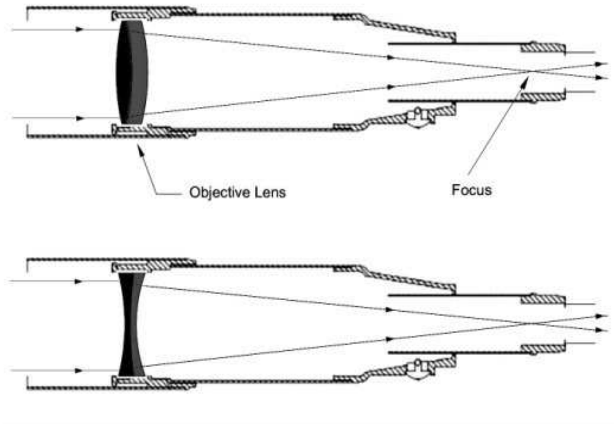


Fig. 3. A schematic view of the convex lenses for the Galileo telescope (top) and the concave lenses of the Santilli telescope (bottom, international Patent Pending by R. M. Santilli.

Therefore, following the above indicated decades of preparatory mathematical and theoretical research, Santilli constructed in 2012 a new telescope with concave lenses (now called Santilli telescope), conducted systematic view of the night sky, and reported in 2014 the first apparent detection of antimatter galaxies, antimatter cosmic rays and antimatter asteroids [15].

The reported detections were conducted on October 27, 2013, in the Vega region of the night sky from the Gulf Anclote Park, Holiday, Florida, on the edge of the Gulf of Mexico, GPS 28.193461, -82.786184, via the use of a 100 mm Galileo telescope and 100 mm parallel mounted, Santilli telescope as shown in Figure 4.

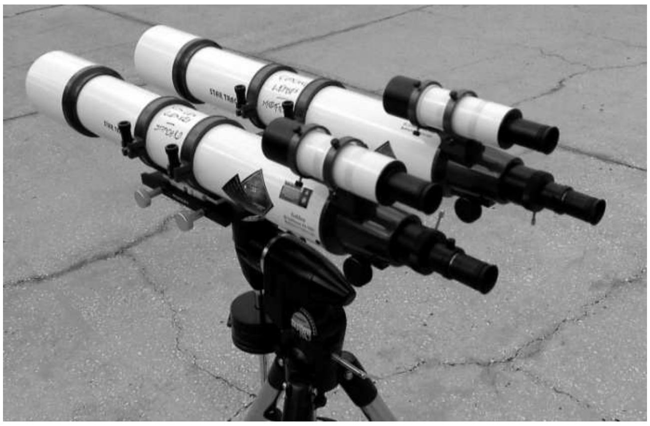


Fig.4. A view of the Galileo telescope and the parallel mounted Santilli telescope used in the preceding as well as the detection presented in this paper.

Images were taken via a digital camera Canon 600 D with ISO 800 sensitivity set to a 15 second exposure so as to have long traces that cannot possibly be confused with the background [15]. These detections provided the following images focused by Santilli telescope with concave lenses but absent in the parallel Galileo telescope with convex lenses [15]:

(1) Streaks of darkness over the background that can only be due to a faraway source of antimatter light;
(2) Circles solely possible from an essentially instantaneous propagation of antimatter light in our atmosphere (due to the 15 seconds exposure) expected due to antimatter cosmic rays annihilating in our atmosphere; and
(3) Dots and traces of various sizes and shapes also occurring under a 15 seconds exposure thus suggesting another almost instantaneous source whose most plausible origin is the annihilation of small antimatter asteroids in our atmosphere.

On November 7, 2013 and on December 4, 2013, Bhujbal, Kadeisvili, Nas, Randall, and Shelke conducted independent detections of the sky via the use of exactly the same pair of telescopes, the same camera, the same location and the same procedure as those used by Santilli [15] and published in refereed paper [25] confirmation of Santilli's detection of streaks, circles and dots or traces detected in the Santilli telescope but not present in the Galileo telescope.

2. Confirmatory Detections

On October 27, 2014, beginning at 9:10pm, the authors went to the same location of the preceding detections [15, 25], Gulf Anclote Park, Holiday, Florida, GPS: 28.193461, -82.786184, with the same pair of parallel Galileo and Santilli telescopes, and inspected the same region of the night sky, but this time via the use of a 35 mm SLR Canon F-lN camera with the following settings: shutter speed B, ASA 200 & 400, and exposure compensation 1.

The above equipment was oriented toward the Draco and Vega regions of the night sky with camera exposure on both telescopes for 15 seconds and captured numerous images on 35 mm Kodak E200 and Fujifilm Provia 400X which can be viewed at the link of reference [29].

The rolls containing all original images were developed by Zebra Color Company, 1763 1st Avenue North, St. Petersburg, FL 33713 and the developed images were scanned at 5760 dpi. The scanned images were enlarged and inspected by the authors via the use of paint.net software for PC, and representative images of the detections are presented in Figures 5 through 11. The identification of the location of the traces in the various films is provided in Ref. [29].

As one can see, our detections confirm the original detections by Santilli [15] as well as the preliminary confirmations [25], via images of the Vega and Draco regions of the night sky under 15 second exposures, which images are only present in the Santilli telescope and not in the Galileo telescope, thus providing:

(1) Confirmation that the Santilli telescope with concave lenses can indeed focus distinct images contrary to popular beliefs for centuries;
(2) Confirmation of the existence of streaks in the Santilli telescope with the same orientation and length (under the same magnification) as the streaks present in the Galileo telescope;
(3) Confirmation that the streaks in the Santilli telescope are due to antimatter light as the sole possible interpretation at this writing;
(4) Confirmation of Dirac's historical hypothesis that antimatter has negative energy due to the dark character of antimatter images compared to the streaks from the Galileo telescope that are illuminated by matter light;
(5) Confirmation of the prediction by Santilli's isodual relativity on the existence of antigravity between matter and antimatter because the repulsion of antimatter light by matter is necessary for concave lenses to focus images.

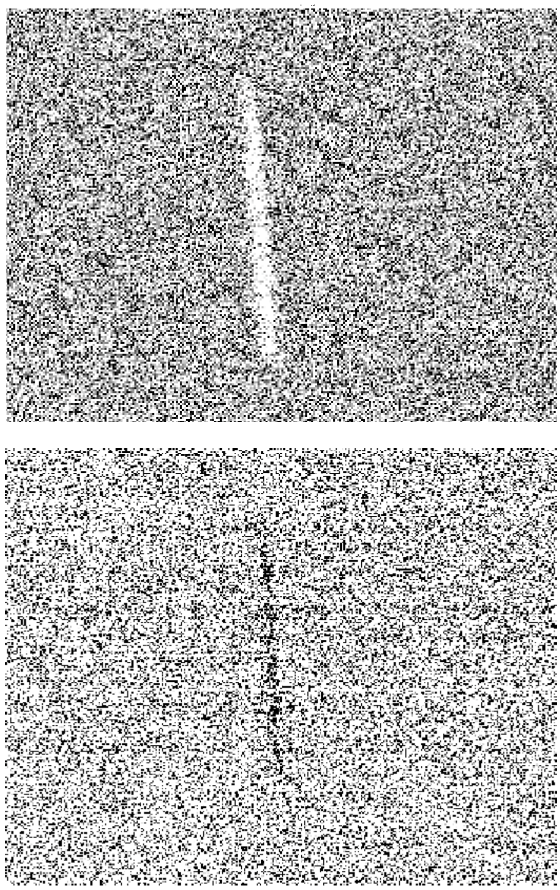


Fig. 5. Images from the Vega region of the night sky showing a streak due to matter light from the Galileo telescope (top) and a streak of darkness from the Santilli telescope caused by antimatter light (bottom).

It is evident that the most plausible interpretation of the streaks in the Santilli telescope is that they are caused by antimatter light. In particular, their dark character appears to be a beautiful confirmation of Dirac's historical intuition that antimatter has negative energy, as clearly noted by Santilli in Ref. [15] with his equally historical resolution of the problems of negative energies via the isodual mathematics.

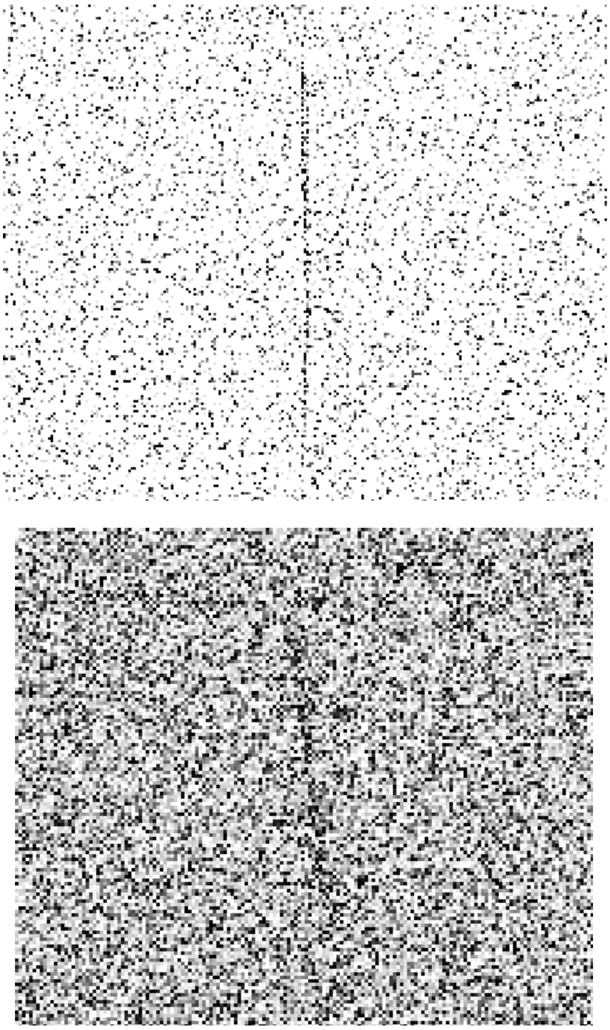
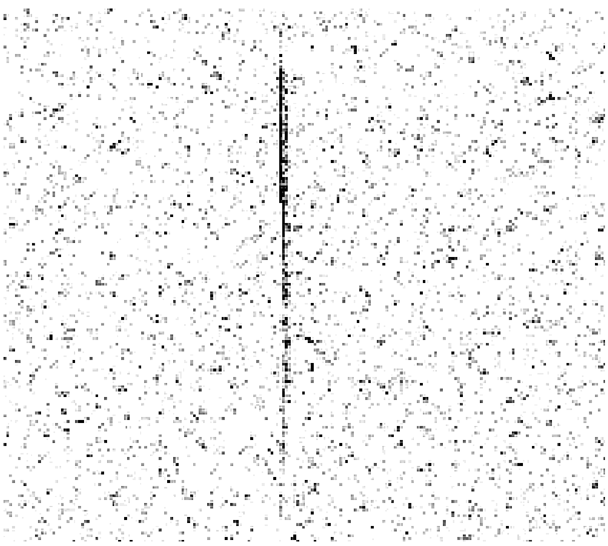


Fig.6.*Images from the Vega region of the night sky from the Santilli telescope showing streaks of darkness caused by antimatter light.*

Therefore, the most plausible origin is that of antimatter galaxies since the presence of antimatter stars in the neighborhood of our galaxy is implausible per our current knowledge.



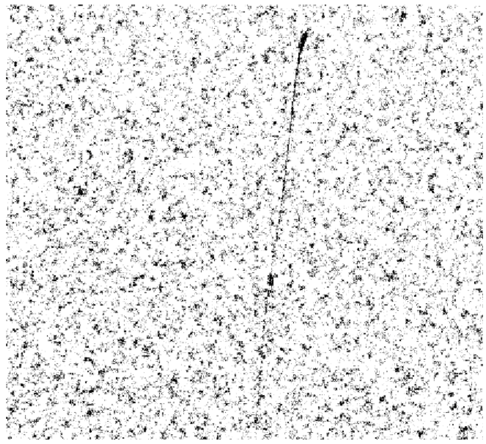


Fig. 7. I*mages from the Vega region of the night sky showing a streak of darkness expectedly from faraway antimatter light (top), and a streak of darkness expectedly from a small antimatter asteroid annihilating in our atmosphere (bottom).*

Our detections also confirm the presence of streaks in the Santilli telescope that are not parallel to the streaks in the Galileo telescope, since they have random length and orientation (see the representative images at the bottom of Figures 7, 9, 10), whose most plausible origin is that of antimatter light produced by small antimatter asteroids annihilating in our upper atmosphere.

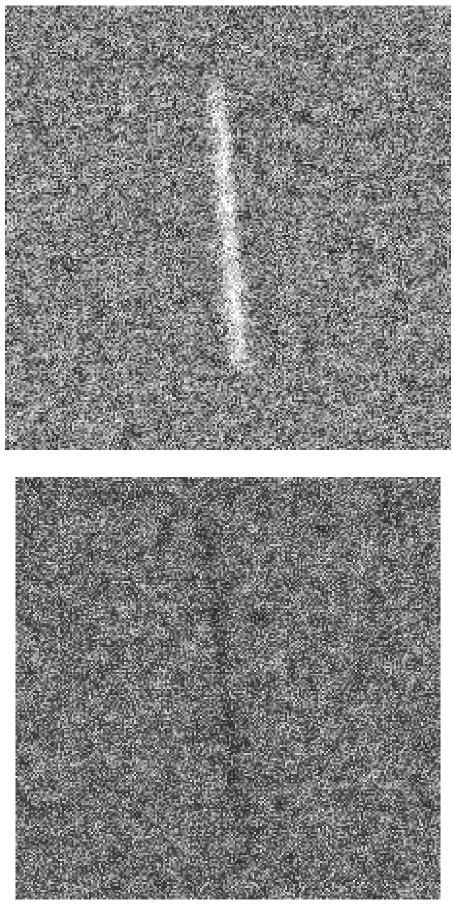


Fig. 8. *Images from the Draco region of the night sky showing a streak caused by matter light from the Galileo telescope (top) and a streak of darkness from the Santilli telescope caused by antimatter light (bottom).*

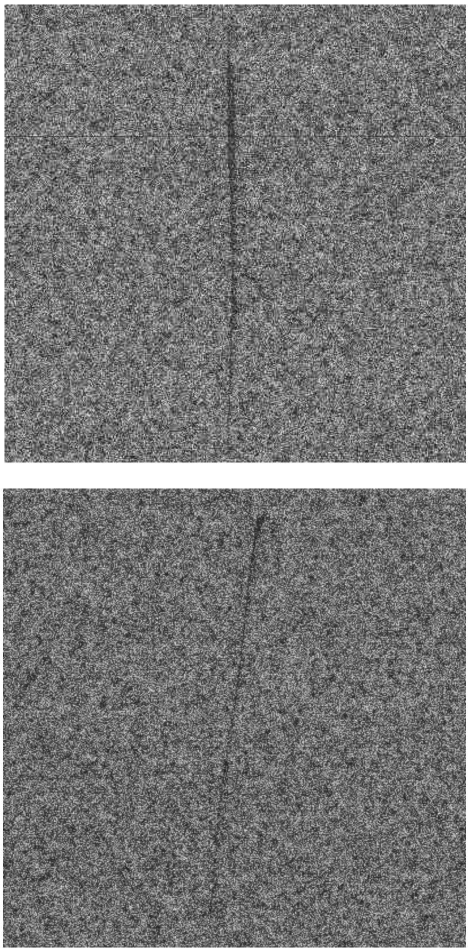


Fig. 9. *Images from the Draco region of the night sky via the Santilli telescope showing streaks of darkness caused by antimatter light.*

In Figs. 11 we have reported anomalous dots present in the Santilli telescope but not in the Galileo telescope whose possible origin may well be that of antimatter light produced by antimatter cosmic rays annihilating in the upped region of our atmosphere, thus reaching us almost instantly.

However, a number of aspects remain to be resolved prior to a final identification of the origin of these dots, such as; the dots detected in our 35 mm camera are different than the circles detected in the digital camera [15, 25] and this difference should be explained; the duration of the annihilation process for antimatter cosmic rays should be taken into account to ascertain whether antimatter light producing dots is instantly or progressively produced at the time of annihilation.

Additionally, Santilli indicated in his origination paper that matter-antimatter annihilation produces two different lights, matter light detected by currently available instruments (as well as by our naked eye) and antimatter light not detectable via conventional equipment (nor by our eye due to the convex character of our iris) [15].

However, the origin of the dots of Figure 11 as being due to the annihilation of antimatter cosmic rays in our upper atmosphere remains plausible.

We should also report that the quality of the images from the Santilli telescope obtained via the 35 mm film camera are clearly superior to the same images under the same conditions obtained via a digital camera. In fact, jointly with the images reported in Figs. 5-11, we obtained images via a Cannon 6D camera. The latter images are not reported in this paper because of their lesser quality than the images from a 35 mm film camera. Such a difference should be expected from the fact that light is captured in a film at the molecular level, while in a digital camera light is captured at the dimensionally much bigger level of pixels.

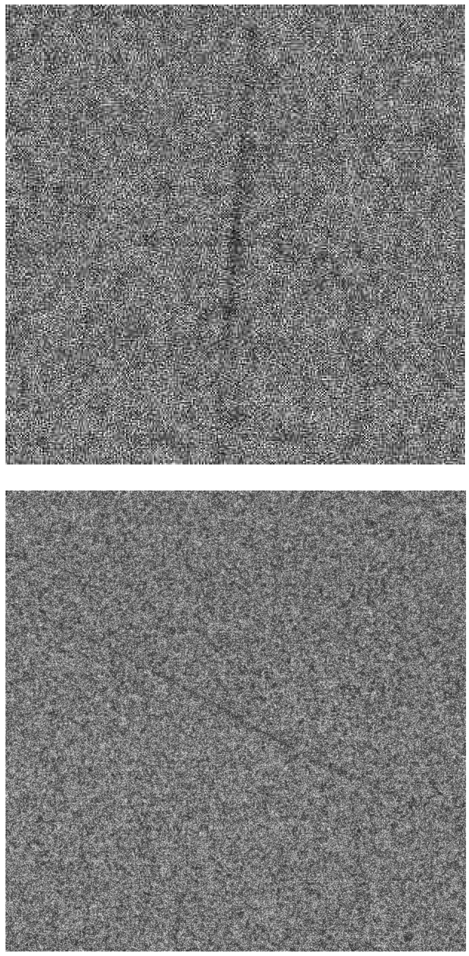


Fig. 10. *Images from the Draco region of the night sky showing a streak of darkness expectedly from faraway antimatter light (top), and a streak of darkness expectedly from a small antimatter asteroid annihilating in our atmosphere (bottom).*

A few comments are now in order. It should be stressed that the primary objective of our detections, as well as that of the preceding ones [15, 25], is that of establishing the existence of streaks focused in the Santilli telescope but not in the Galileo telescope, without any intent of identifying their exact location in the night sky.

This is due to the evident reason that there exists no optical possibility whatsoever at this time for the alignment of the Santilli telescope with known stars since none of them are visible in the Santilli telescope.

Also, the Galileo and Santilli telescopes could be solely aligned in parallel via optical means, as a result of which any desire of accuracy in the location of the origin in the sky of antimatter streaks is outside currently available capabilities of detecting the exact location of antimatter sources in the universe.

Additionally, it should be noted that the orientation of the same camera in the transition from the Galileo to the Santilli telescope was done via a bubble level attachment which, however, is not very accurate. As a result, minimal deviations in the orientation of the streaks of light and darkness should not be surprising.

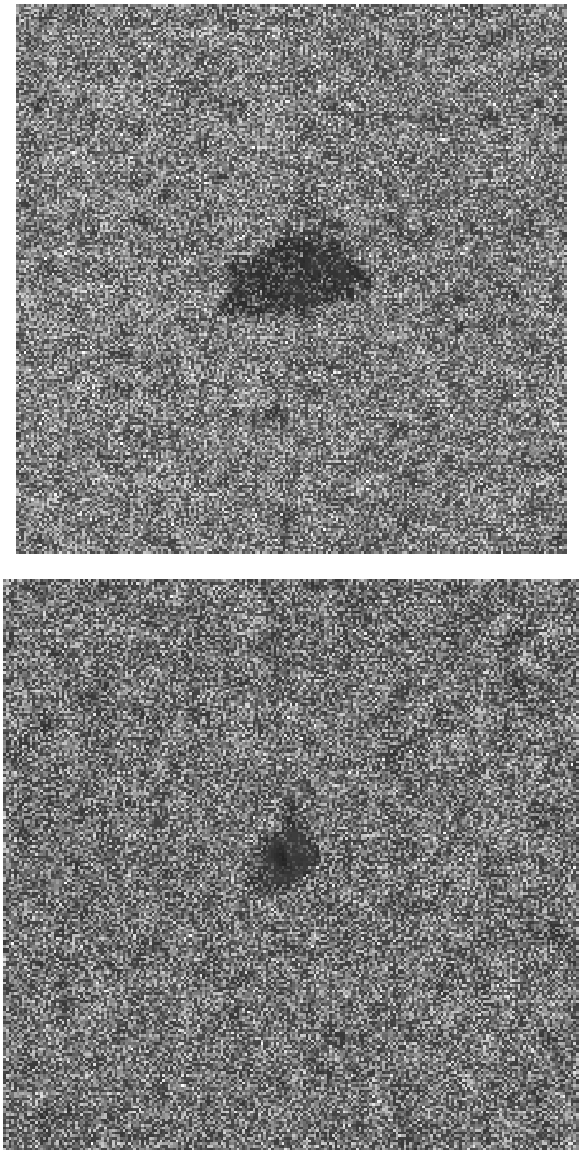


Fig. 11. Images from the Draco region of the night sky via the Santilli telescope showing dots expected from the annihilation of antimatter cosmic rays in the upper regions of the atmosphere.

It should be also noted that the conditions of our detections, as well as those in the reported references [15, 25], are rather poor because measurements occurred at sea level and near the sea, thus resulting in considerable absorption of both matter and antimatter light by the atmosphere.

Yet, we believe that the detection of clear images in the Santilli telescope under the indicated poor conditions and the quite limited capability of the telescopes add credibility to our findings.

We should note numerous apparent detections of antimatter in the universe via conventional means, thus without the Santilli telescope. Among them, the 1908 Tunguska explosion in Siberia shown by Santilli [15] (including historical references not repeated here for brevity) as solely admitting a quantitative interpretation via the annihilation of an antimatter asteroid in our atmosphere; small flashes seen by astronauts and cosmonauts in the dark side of our upper atmosphere suggesting a visual detection of one of the two lights emitted by the annihilation of antimatter cosmic rays [15]; NASA's [30] apparent detection of positrons emitted by our atmosphere that may confirm Santilli's detection of antimatter cosmic rays; CERN's [31] detection of excess positrons in space that provide an additional confirmation of the existence of antimatter cosmic rays.

We should also indicate that the confirmation of expected from antimatter asteroids provide further motivation for the study of their trajectory in our Solar system suggested in Ref. [22] and initiated by one of us in Ref. [26].

Finally, our detection of antimatter bodies in the universe that are completely invisible to all our currently available telescopes as well as to the naked eye, provides significant credibility to Ying's twin universes mathematically predicted in Ref. [27]. As a matter of fact, the identification of means for the possible detection of Ying's twin universes is quite intriguing in our view, since such means are expected to be different than the Galileo and the Santilli telescopes.

A bigger pair of 200 mm Galileo and Santilli telescopes are under construction and they will be made available to astrophysics laboratories for their independent verification as well as for the initiation of the expected laborious process of identification of the precise location of the sources of antimatter light in the universe.

3. Conclusion

Following the preliminary independent confirmation of Ref. [25], in this paper we have provided additional confirmations that, as a result of unprecedented mathematical, theoretical and experimental research on antimatter over decades [1-15], Santilli has achieved: 1) A theory of neutral or charged antimatter for the first time applicable from classical mechanics to second quantization in a way compatible with experimental data; 2) A new relativity for the first time capable of an axiomatically consistent, classical representation of the gravitational field of neutral or charged antimatter bodies; 3) The discovery of a basically new telescope with concave lenses that has produced for the first time images of antimatter bodies in the large scale structure of the universe that are totally invisible to all available telescopes as well as to the naked eye; 4) The experimental confirmation of Dirac's historical hypothesis that antimatter carries negative energy while resolving related problems via Santilli'sisodual mathematics; and 5) The first known experimental evidence on the existence of antigravity between matter and antimatter.

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