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PRELIMINARY CONFIRMATIONS OF ANTIMATTER DETECTION VIA SANTILLI'S TELESCOPE WITH CONCAVE LENSES

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Abstract. In preceding works, R. M. Santilli [1] has developed the new *isodual mathematics* and related theory for the treatment of antimatter at the classical as well as quantum levels in a way compatible with existing experimental knowledge, and the prediction that antimatter light has a *negative index* of refraction. More recently, Santilli [2] has shown that the sole possible detection of antimatter light with a negative index of refraction is that via a telescope with concave lenses; he has built such a telescope for the first time, hereon called Santillis telescope and provided tentative views of the Epsilon Alpha and Beta region of the night sky suggesting the possible detection of antimatter galaxies, asteroids and cosmic rays. In order to initiate the expectantly laborious process of verification or dismissal of these findings, by using the same telescopes, the same camera and the same conditions as those used by Santilli [2], in this paper we present pictures providing apparent confirmation of the focusing of light in a telescope with concave lenses whose most plausible origination is that due to antimatter light.

1 HISTORICAL NOTES

Following decades of research initiated at the Department of Mathematics of Harvard University in the early 1980s under DOE support, the Italian-American scientist R. M. Santilli has constructed a new mathematics, called *isodual mathematics*, which is anti-isomorphic to the conventional mathematics used for matter, and used it to the construction of the corresponding *isodual theory* of antimatter which is applicable from the classical to the quantum level;

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is compatible with all existing experimental data on antimatter at the classical and particle levels; and predicts that antimatter light propagating in a matter transparent medium possesses an index of refraction opposite that of matter light, which is referred to as a *negative index* of refraction (see monograph [1]).

In the recent paper [2], Santilli has shown that the only plausible way of detecting antimatter light with a negative index of refraction is that via a telescope with concave lenses; he has conceived and built such a telescope for the first time, thus being referred hereon as *Santilli telescope*, and has presented preliminary pictures with his telescope of the Epsilon Alpha and Beta region of the night sky that appear to support the capability of a telescope with concave lenses to focus apparent antimatter light.

In order to initiate the expectantly laborious process of experimental verification or dismissal of Santilli's findings, by using the same telescopes, the same camera, the same settings and the same conditions as those of Ref. [2], in this paper we present preliminary pictures of the same region of the night sky that provide preliminary confirmation of the capability of a telescope with concave lenses to focus light whose sole conceivable origin is that from antimatter.

To avoid unnecessary repetitions, in this paper we use the entire formulations, language and terminology of Ref. [2] whose technical knowledge is, therefore, a necessary prerequisite for the understanding of this paper.

In future works, the authors plan to present additional results from pictures of regions of the night sky other than the Epsilon region.

2 . DESCRIPTION OF RESULTS

By using the same pair of Galileo and Santilli telescopes as those used for Ref. [2] (Pictures 3 to 7), the same camera, the same exposure of 15 seconds for ISO 1600, on November 30, 2103, some of us went to Sebring, Florida (an area of central Florida known to astronomers for the clarity of the sky due to the absence of nearby large cities) and obtained pictures from both telescopes of the same region of the night sky studied by Santilli (that of Epsilon Alpha and Beta stars).

Some of the original pictures are available from Ref. [3] in raw and tiff formats under the markings "Galileo-Epsilon-Sebring" and "Santilli-Epsilon-Sebring." Figs. 1 to 4 reports selected joint views from Galileos and Santillis telescopes showing clearly anomalous streaks that are present in Santillis telescope but absent in Galileos telescope, which streaks have essentially the same orientation and length of the streaks caused by matter stars, thus confirming the corresponding anomalous streaks first obtained by Santilli in a telescope with concave lenses.

On December 4, 2013, by also using the same telescopes, the same camera and the same settings, we went to Enclote Gulf Park in Holiday, Florida, where Santilli achieved his original findings, and obtained pictures of the Vega region of the night sky that includes that the Epsilon Alpha and Beta stars.

Representative pictures of these second tests are also included in Ref [3] indicated as "Galileo-Vega-Holiday" in both raw and tiff formats, and "Santilli-Vega-Holiday" also in both raw and tiff formats. Anomalous streaks from these latter tests which are present in Santillis telescope but absent in Galileos telescope are reported in Fig. 6 and 7 by showing remarkable similarity in orientation and length with the streak caused by a matter star or

galaxy of Fig. 5, thus providing additional confirmation of the anomalous streaks obtained by Santilli in a telescope with concave lenses.

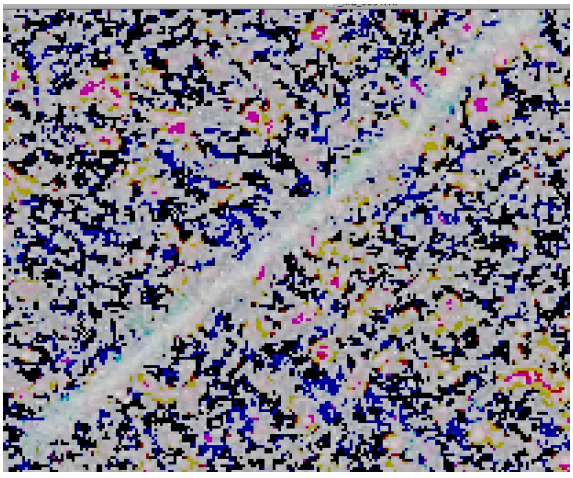

Fig. 1 Picture from Galileos Telescope of a star in the Epsilon region of the sky from Sebring, Florida.

As one can see, also in confirmation of the results of Ref. [1], all the anomalous streaks from Santillis telescope are predominantly streaks of darkness, rather than light over a background of matter light. Therefore, in the event confirmed, the anomalous streaks of pictures 1 to 7 appear to confirm the apparent detection of antimatter galaxies.

In Fig. 8 we report an additional quite anomalous black streak of unknown identification present in only one of the pictures from Santillis telescope in the Epsilon region of the sky viewed from Sebring, Florida., which anomalous trace is absent in Galileos picture of the same area of the sky. Due to its orientation being different than that of the streaks of matter stars of Fig. 1, and its shortness despite the 15 seconds exposure, we argue that this streak may be due to a small antimatter asteroid annihilating in the upper region of the our atmosphere. The significance of the anomalous trace of Fig. 8 is due to its size and quite distinct darkness over the background of matter light.

In Figs. 9 to 15 we report confirmation of the circles in Santillis telescope, not present in Galileos telescope, first detected by Santilli [2], including the confirmation that they all having approximately the same diameter under the same magnification, they are predominantly due to darkness, rather than matter light, and they occur at random in various parts of the night sky.

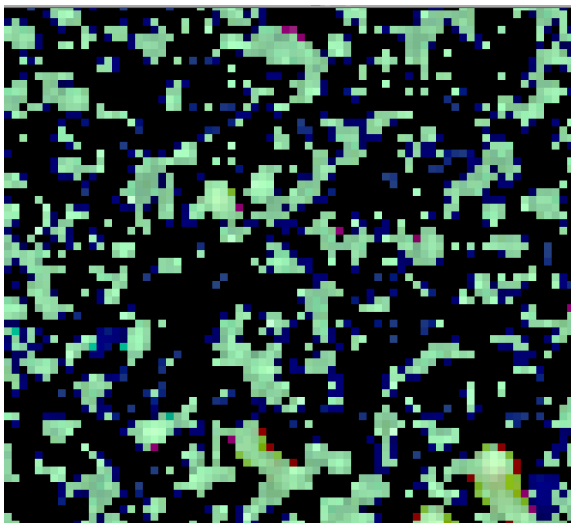

Fig. 2 Picture from Santillis telescope of a black streak in the Epsilon region of the sky from Sebring, Florida.

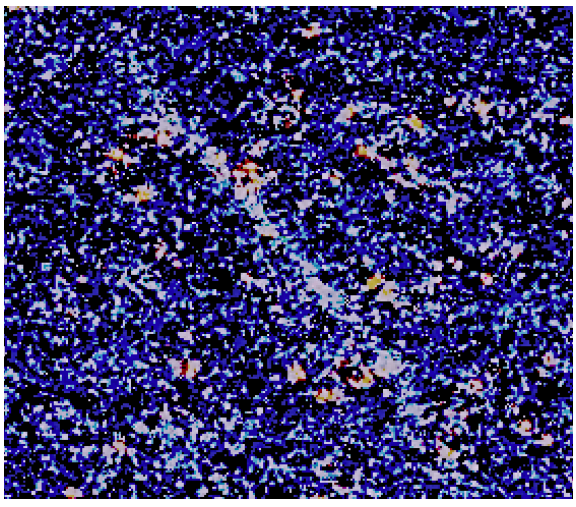

Fig. 3 Picture from Galileos telescope of a star from the Epsiloegion of the sky from Sebring, Florida.

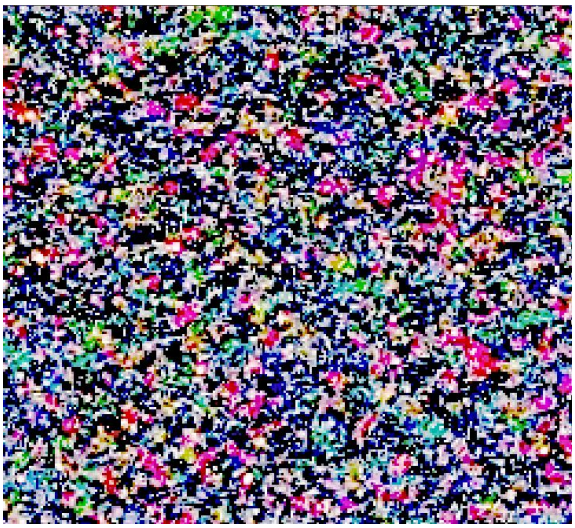

Fig. 4 Picture from Santillis telescope of a black streak in the Epsilon region of the sky from Sebring, Florida.

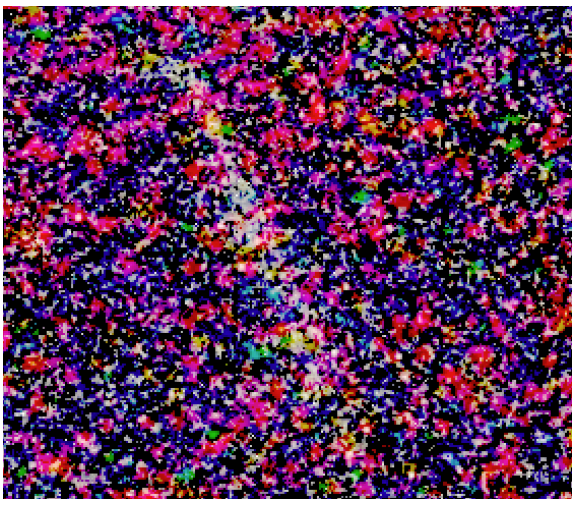

Fig. 5 Picture from Galileos Telescope of a streak of a matter star in the Vega region of the sky from Holiday, Florida

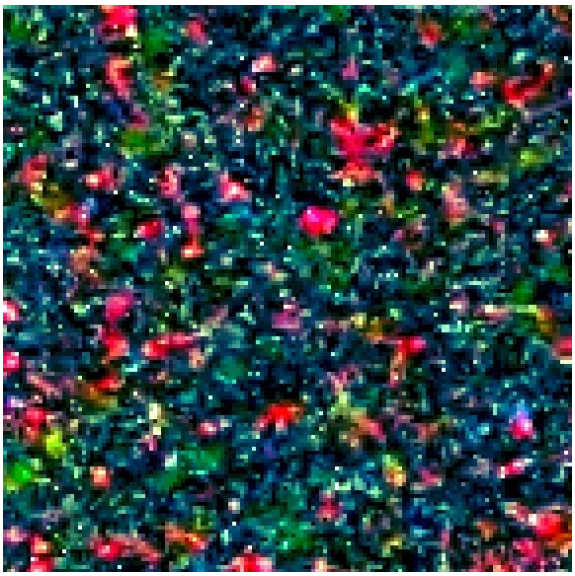

Fig. 6 Picture from Santillis telescope of a black streak in the Vega region of the sky from Holiday, Florida.

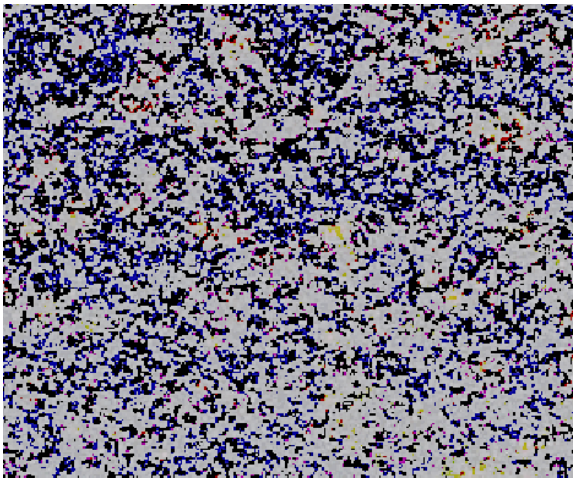

Fig. 7 Picture from Santillis telescope of another streak in the Vega region of the sky from Holiday, Florida.

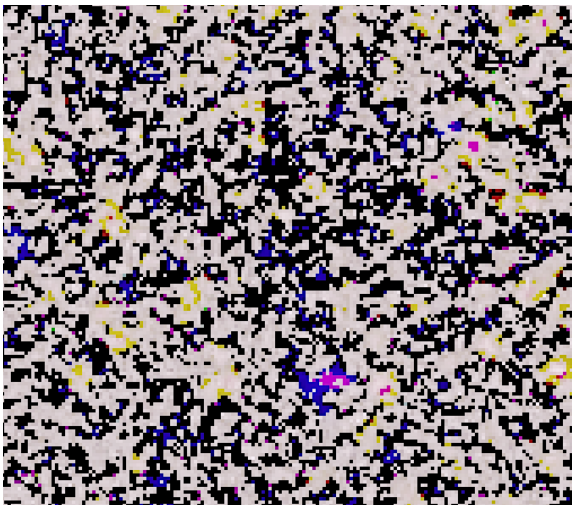

Fig. 8 Picture from Santillis telescope of an unknown event in the Epsilon sky region from Sebring, Florida.

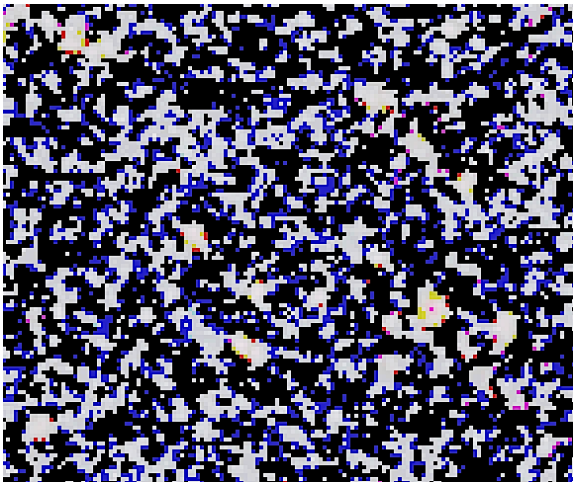

Fig. 9 Picture from Santillis telescope of a circular trace.

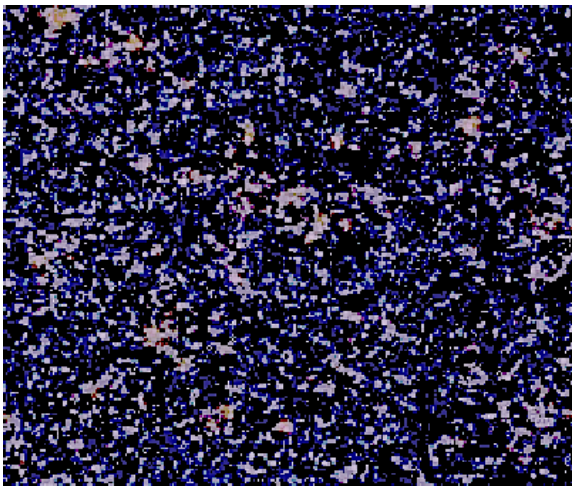

Fig. 10 Picture from Santillis telescope of another circular trace.

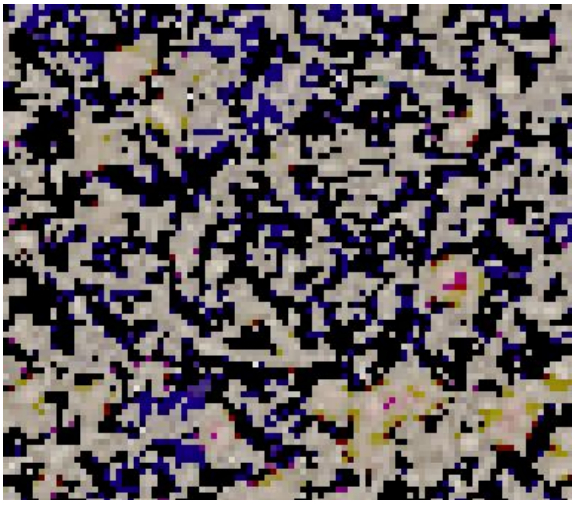

Fig. 11 Picture from Santillis telescope of yet another circular trace

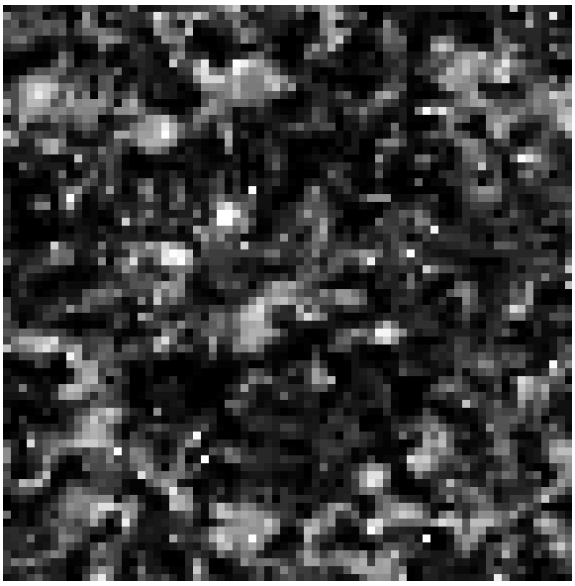

Fig. 12 Picture from Santillis telescope of yet another circular trace

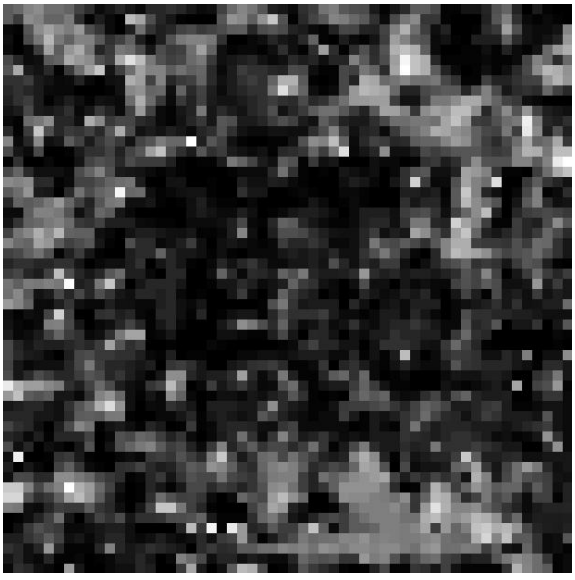

Fig. 13 Picture from Santillis telescope of yet another circular trace.

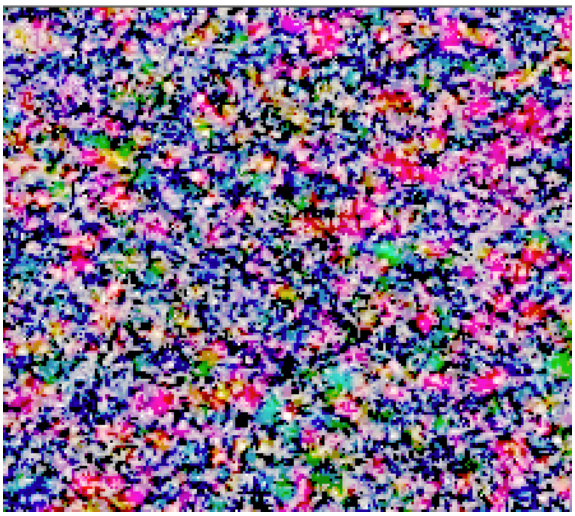

Fig. 14 Picture from Santillis telescope of yet another circular trace.

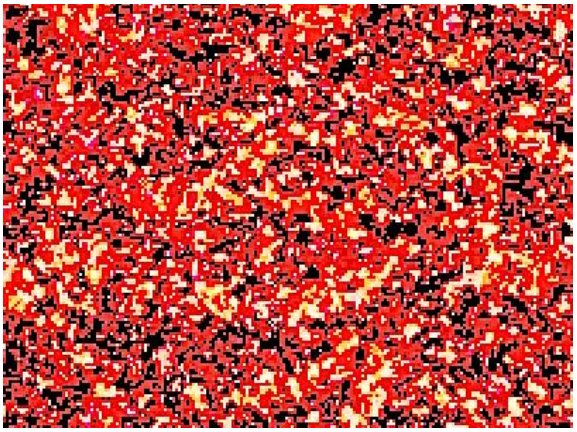

Fig. 15 Picture from Santillis telescope of yet another circular trace

3 CONCLUSIONS

In this paper we present apparent confirmations of all antimatter findings first presented by Santilli in Ref. [2], namely:

1) Due to the conjugation of all quantities, antimatter light has a negative index of refraction when propagating within a matter medium;

2) The only known way to detect light with negative index of refraction is that via a telescope with concave lenses first built and tested by Santilli and, therefore, called Santilli telescope;

3) Despite, and actually in view of its concave lenses, Santillis telescope can focus images of far away light sources that can only be due to antimatter galaxies;

4) Santillis telescopes detect anomalous traces that can arguably be due to small antimatter asteroids annihilating in the upper portion of our atmosphere;

5) Santillis telescope also detects numerous anomalous circles that are at random, in the night sky and have approximately the same diameter under the same magnifications, suggesting the detection at sea level of antimatter light originating from the annihilation of antimatter cosmic rays in the upper region of our atmosphere;

6) All anomalous traces are predominantly due to darkness, rather than light, over a background caused by matter light;

7) The sole known interpretation of dark images in a camera built for matter light is that antimatter light possesses negative energy, thus confirming the main result of Ref. [2], namely, Dirac's original conception of antiparticles as having negative energies.

4 ACKNOWLEDGMENTS

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[2] Santilli, R. M. Apparent detection of antimatter galaxies via a telescope with convex lenses. *IBR preprint TH-339-13*, to appear (2014), http://www.santilli-foundation.org/docs/Antimatter-telescope-2013-rev-2.pdf

[3] Bhujbal P. M., Kadeisvili J. V., Nas A., Randall S. , and Shelke T. R. Pictures of the Epsilon and Vega sky (785 MB) http://www.santilli-foundation.org/docs/Sebring-Holiday-Epsilon-Vega.zip