

You heard it first at LAS – and a plea for assistance.

On Tuesday, the first day of December 2015, I was privileged to share my passion for the sky, more correctly for Cosmology, at the monthly open meeting, by giving a talk entitled 'Our Journey through Space Toward Leo'.

This was the very reason that I joined LAS three years ago, seeking the assistance of Astronomers. It was shortly after having presented a paper to a conference in London, showing that the measured value of the Fine Structure Constant of Space (known as *Alpha*, and defining the spacing of the spectral lines of light from stars), had a dependency on the speed of our solar system through the Universe. Those present saw that a speed of 361± 54 km/s (in the direction: 11.23±0.46h, RA, 19° ± 7.5° DEC) was determined by measurements of the anisotropy of the Cosmic Microwave Background from a high altitude NASA aircraft in 1978. Other places in the Milky Way and other galaxies, we can presume, will have different '*peculiar*' speeds (*peculiar* means specific, not odd).

The discovery of the formula for Alpha came about because of the interest of me and my colleague Ian Montgomery (in Melbourne, Australia) in a non-standard model of the vacuum comprising a poly-crystalline lattice of electrons and positrons. It dates from 1973, was proposed and detailed by the late Professor M. Simhony and named the epola model. It predicts that atoms will have a speed dependency when passing through the vacuum. In order to determine if the physicality of the vacuum was detectable we had devised an experiment, that has been operating since early 2012, to monitor possible periodicity of nuclear decay rate as the Earth rotates around the Sun, adding and subtracting ~20km/s according to direction. The meeting was shown the current daily summary chart where an annual modulation curve is evident but with other significant secondary deviations. A difference was shown by the plots for the periodicity of two different source samples, one in extended physical form, implying possible directional dependency but this is subject to further investigation and consideration.

Short term charts showing periodicities within days and weeks suggest correlations to the Sun and Moon, as indicated by the Tide Heights at Skegness, and possibly to the position of the planets. A similar experiment has been running about 20 miles distant during this year on different instrumentation built by our LAS chairman, David Castledine. The meeting was shown how our results concurred and the effect of depressed decay rate during the 'Blood Moon' eclipse in September. Both experiments were demonstrated in operation during the talk.

For the first time in public, the meeting was shown other remarkable coincidences, that, with my colleague Ian, we have found to have a dependency on our speed at about 390km per second.

- a) The UV light emission from a hydrogen atom, as its electron decays from the first excited orbital shell to the ground state (2S to 1S), has a time period of the emitted wave (time to travel one wavelength at the speed of light) equal to the time taken by the proton at the centre of the atom to move by the difference of the two radii at the speed toward Leo.
- b) The heaviest primordial natural elements on Earth, (older than the 4.5 billion years of the solar system), uranium and thorium, are still radioactive. Their de Broglie wavelength, aka pilot wave of matter, a function of mass and speed, have a value close to the lattice constant (cell size) of the epola at 400km/s. Heavier elements, with smaller de Broglie wavelength at this speed have already decayed away to lighter atoms and must be manufactured in a nuclear reactor. It would seem that probability of collision of a nucleus with the epola lattice may have affected decay rate. We have a draft paper on this topic regarding a possible explanation for the concepts of dark matter and energy by this action of the epola model.

Several papers have been published during recent years testing an old myth that the lunar phases affect plant growth. In one experiment in 2014 it was found that the potassium content of Mung beans was dependent on the lunar phases – much as our charts of daily decay rate count are affected. This may indicate that the ionisation potentials of atoms vary with gravitational field. In 2008 we circulated a paper in 'academic circles' suggesting an experiment to investigate variation of ionisation potentials measured by a very sensitive test (ZEKE MATI) in the International Space Station. It rapidly orbits the Earth, presenting different aspects to Leo, and when in line, adding or subtracting significant speed to our '*peculiar*' velocity of Earth at different times of the year.

Summarising, can you assist in any way? Perhaps by presenting our vast amount of data in more digestible ways, such as by colours or music? You might be a planetary observer, an author, an electronics hobbyist, a programmer or a mechanic – the next generation of test equipment (some shown at the meeting) and other experiments require preparation, programming and operating. Even if only to discuss, suggest and support, a group effort would be much more productive than can be achieved at

the moment. Just imagine, new science developing from a publication by a list of LAS members, in the fashion of those papers from CERN and wouldn't it be great if we could get an experiment onto the ISS!

If this topic is of any interest then do please come along on a regular Tuesday evening members meetings to discuss further. In the summer evenings when observational astronomy is limited by the short nights we might organise a more regular group meeting agenda. If you are interested but cannot attend, do please get in touch by email.

To those who have already become involved, our sincere thanks.

Guy Grantham rgg@epola.org.uk