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## The Origin of Quanta

### A Proposed New Decomposition of the Phenomena of the Physical World

#### Appendix 1

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#### Redshift – a Suggested Experiment

It is known that lasers can be used to measure the distance of the Moon from the Earth by reflection. My suggestion is as follows:

- select a laser with a frequency which is known to give a good redshift in the visible part of the spectrum,
- direct a beam from this laser onto the reflectors placed on the Moon,
- detect the reflected light,
- compare the frequencies of the source and the reflected light by interference. (There would probably be a phase change caused by reflection, which would have to be allowed for, but this would not affect frequency).

A preliminary calculation suggests that they should produce a beat frequency in the short/medium microwave.

It might even be possible to produce interruptions in the pattern of projected pulses of the laser to obtain an identifiable signal i.e. a binary code or bits of information in the beam which is produced by interference.

The half million miles distance of the Moon from the Earth (and back) may be just great enough to produce a detectable effect. The Moon moves slowly enough relative to an observer on Earth not to produce potential velocity effects which might be considered to confound the results, so avoiding the general problem in this type of physics of using the results of theoretical analysis to prove its validity.

Experiments which involve transmission from satellites might run into this kind of difficulty. Moreover, manmade satellites in geostationary orbit are unlikely to be far enough away to produce a sizeable redshift by reflection.

It seems most important to know whether redshift is caused by the passage of electromagnetic radiation through 'empty' space. If it is, it seems to me that some drastic rethinking is required both in (astro)physics and in cosmological models, not least the Big Bang theory, which I must say seems to me to lack elegance, particularly in its treatment of homogeneity through time. However, it is reassuring that the model which I propose is consistent with all astronomical observations, though not their current interpretation.

I am sure you have at your disposal the facilities to make such measurements. I hope you will have someone perform an experiment of this sort.

If I am right, it could be a much bigger (and older!) Universe than anyone thought .

A.C. Sturt

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