

GRAVITATION, ELECTRIC FIELDS, SOLAR/STELLAR WINDS AND IONOSPHERIC OUTFLOWS: LINKS FROM AN EXCITING NEW DEVELOPMENT IN FUNDAMENTAL PHYSICS

MILES F. OSMASTON

The White Cottage, Sendmarsh, Ripley, Woking, Surrey GU23 6JT, UK: miles@osmaston.demon.co.uk

Both Sun and Earth exhibit ionic outflows suggestive of a radial electric field gradient, but for which magnetic mechanisms are currently explored. For other stars, the universality, high mass-rates and early start-up of stellar winds are increasingly evident, ranging to $>1M_{\text{Sun}}/20\text{kyrs}$ for $30M_{\text{Sun}}$ Wolf-Rayet stars, radiation pressure being the favoured mechanism, though its validity is unconvincing and fails totally for the Sun. The Sun's optical 'surface'/photosphere, at $\sim 5.8\text{kK}$, is the likely source of the low-FIP ions which dominate the solar wind; it is formed by the high opacity of the negative H ion whose extra electrons are presumably those left behind by the wind. The wind widely exhibits light-isotope enhancements, ranging up to >1000 -fold for He $3/4$ ions, such discrimination being diagnostic of an electric field. Ionization temperature rises steeply through the chromosphere, attaining $>5\text{MK}$ in the corona, with ionic packages (CME) continuing to accelerate out to $15R_{\text{Sun}}$. For the Earth, the ionic outflows seem to be confined to the poles, where the ionization is due to particles guided in by the geomagnetic field, and to the dayside, where solar radiation is important. The related electrons, accelerated inwards, produce the aurora.

Review of fundamental physics, currently under way, illuminates this problem. It has two starting-points. In rejecting an aether in 1905 Einstein overlooked that it might be in random motion, possibly tied to particle motion, which would introduce a set of TEM-wave transmission effects (all 3 of which are regularly observed, but unrecognized as such). Second, the supposed relativistic mass-increase with velocity overlooks that the way particles are accelerated or retarded involves the velocity- c -limited interaction of the accelerating field with that of the particle, producing an identical effect without change of mass.

Particle-scattering experiments prove that particles do have finite size, opening the way to 'designing' the structure of a particle to give it a specified, unchanging, mass (i.e. mutual attraction for its neighbours). In the Continuum Theory (CT) that is emerging, Maxwell's aether is restored as a superfluid continuum of self-repelling (negative) electric charge. Particles are rotational configurations 'made of aether' and have positive or negative charge by incorporating less or more aether than the mean, which consequently must have density $>3.1 \times 10^{29}$ coulombs/cm³. Those that have mass pass aether through themselves via a sucking and a spitting pole; this makes them self-orient and suck themselves together (gravitation). In a gravitational assemblage this action maintains a lowered aether density in the interior, i.e. formation of an electric potential gradient, a gradient which continues externally due to interaction with the rest of the Universe. It is to this field that the phenomena outlined above seem attributable. Solar comparison predicts the field at the Earth's surface to be $\sim 3\text{V/m}$ but, being pervasive, observing it is elusive.

Overall, CT appears not only to fit the framework of observation claimed as exclusive to Relativity but offers hugely more, e.g. in the dynamics of Solar System formation (Osmaston, Goldschmidt 2000). Ionospheric investigations offer a chance to check its physically most revolutionary prediction.

[499 words]

Keywords:- Electric fields, Gravitation, Auroral ionosphere

Author:- 016795 Miles F. Osmaston, The White Cottage, Sendmarsh, Ripley, Woking, Surrey GU23 6JT, UK, Tel: +44-1483-224138, E-mail: miles@osmaston.demon.co.uk

Message to convenors:- Links to my fuller outlines of CT are under PIRT VIII on the website of the Brit Soc for the Phil of Sci at:-

http://www.cet.sunderland.ac.uk/webedit/allweb/news/Philosophy_of_Science/PIRFORM.htm. A longer time-slot would enable me to outline more of the underpinning for CT (from the immense range now available).