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Extending Coulomb's law for gravitation and radiation

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The law enunciated by Charles Coulomb, in 1784, giving force of repulsion or attraction between two electric charges, is the most important principle in physics. However, this law is not complete as it does not include force of gravity between charged particles and does not incorporate radiation from accelerated charged particles. This paper extends Coulomb's law by adding a term for gravitation and invoking aberration of electric field to make speed in an electric field a factor for radiation. In the extended law, accelerating force on a particle of mass m and charge q moving in an electric field E , depends on the speed v , reducing to zero at the speed of light c as a maximum, with emission of radiation and mass remaining constant as the rest mass. This is in contrast to special relativity where accelerating force is qE , independent of speed but mass increases with speed to become infinitely large at the speed of light as a limit. This paper queries the relativistic mass-velocity formula as an infinite mass is not tenable in nature. An important outcome of the paper is that Lorentz factor γ has nothing to do with mass m but it is the result of motion of a charged particle perpendicular to an electric field. It is shown that Rutherford's nuclear model of the hydrogen atom is stable outside quantum mechanics. Balanced electric fields from charges in matter are identified to constitute aether as the medium for gravitation and electromagnetic radiation.

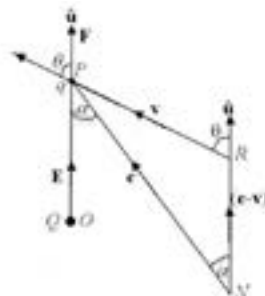


Figure 2. As a result of aberration of electric field, a particle of charge q at P moving with velocity v at angle θ to the electric field E due to charge Q at O , experiences the field propagated with velocity of light c along NP at aberration angle α from OP . The force F is along OP in the direction of vector $(c - v)$.

Biography

Musa D Abdullahi obtained his BSc degree in Physics from the University of Manchester, England, in 1965. He was the first person to obtain a postgraduate degree, in Electronics and Telecommunication from Ahmadu Bello University, Zaria, Nigeria, in August 1968. He taught at Ahmadu Bello University, Zaria and Federal University of Technology, Minna, in Nigeria. He is a Fellow of the Nigerian Academy of Engineering. He retired from public service in August 2000. He is now Adjunct Lecturer in the Department of Physics, UMY University, Katsina, Nigeria. He is a prolific contributor of papers in on-line journals.

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