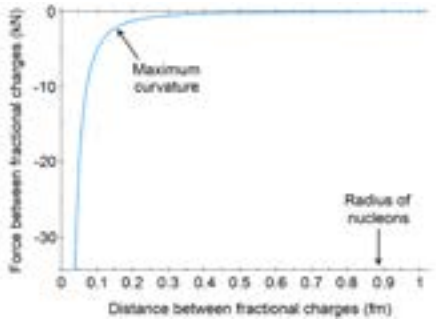
Peter Horst Rehm, J Astrophys Aerospace Technol 2017, 5:2 (Suppl)
DOI: 10.4172/2329-6542-C1-009

A new ontic consideration for nucleon bonding

Peter Horst Rehm
USA

The history of nuclear force theory often includes a mention that the inverse square law forces could not explain how the nucleus was held together? The characteristics of strength that overwhelms proton repulsion, charge independence that includes the neutrons, and extremely short range were never before seen. These were compelling evidence that a new force had been discovered. However, recent reconsideration of the Coulomb force equation suggests that one of its two asymptotes has been neglected. When graphed with distance on the horizontal scale and force on the vertical scale, the classical Coulomb force equation follows the horizontal asymptote and approaches zero force at infinite distance. But going in the other direction, toward zero distance, at some point it switches to unfamiliar behavior that follows a vertical asymptote, with force increasing exponentially without bound. To the extent that this is undocumented, it cannot be considered classical. The point of maximum curvature, the distance where it takes a nearly right-angle turn, depends on the charges. For the nucleons' -1/3 e and +2/3 e charges, this change occurs at about 0.15 fm, conveniently about 20% of the radius of a nucleon. At closer distances, the force increases so fast that at about 0.08 fm apart, or about 10% of the radius of a nucleon, these charges would experience a mutual attraction of 25,000 N. This is enough to make it a contender for the force that is holding the atomic nucleus together. Thus, theoretical or experimental measures of attraction may suggest a distance between charges. Fractional charges were unknown in the 1930s, but their existence and presence in both protons and neutrons, along with other factors presented, challenge the 80-year old conclusion that the nucleus could not be held together by electromagnetic forces.



Biography

Peter Horst Rehm is an Engineer, Inventor, and Former Patent Attorney. The practice of patent law requires a patent practitioner to dive into an often-unfamiliar useful art, write up a formal description, and prove that a client's invention is both new and non-obvious to those of ordinary skill in that art. While laws of nature cannot be patented, the concepts of novelty and non-obviousness still apply to purely scientific theories, as does the experience of finding and identifying such ideas.

PeterHRehm@gmail.com

Notes: