MC Physics: Our Charged Universe
Evidence of Gravity at the Most Basic Universe Level

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ABSTRACT

MC (Mono-Charge) Physics previously postulated that we live in a CHARGED UNIVERSE based on the existence of mono-charges, i.e. quantized CHARGE from the initial Universe. Those mono-charges caused / cause all force (unified as all mono-charge derived) and formed / forms all matter in the Universe using those charge forces. This paper describes the last piece of the Universe puzzle, i.e. understanding of how that simple net charge force interactions causes the force of gravity at the most basic level of the Universe, i.e. elemental particles made of mono-charges. Prior MC Physics reports and papers described the properties of mono-charges, the properties and behavior of real photons of light and all radiation, the process of matter formation during a cooling Universe, and force unification including gravity- all requiring the postulated existence of mono-charges.

Background

Each mono-charge (MC) is theorized to have a given charge type (either positive or negative) and various set charge strengths or potentials. By their very existence in the physical Universe, ***mono-charges cause all force (from interactions between two MCs) and formed/forms all matter using those forces as the Universe kinetically cooled***. Mono-charges are assumed to be point charges, but due to the 'non-merge' requirement in the normal Universe, each MC must have a real boundary of influence generated by a real physical surface or a near-inversion charge force causing each MC to occupy a volume in space with a diameter/ radius. That effective volume keeps charge force joined opposite type MCs apart. That effective volume or diameter/radius of every MC may or may not be a function of charge strength or charge type, but it must exist for the Universe's matter and forces to be as now known. In the examples given herein, the size or diameter of a charge is shown as proportional to that charge's strength.

Furthermore, ***charge forces in nature require that all charges are 'driven' to attract, move towards and, if possible, join with opposite type charges to become overall charge neutral***. This process formed all matter. Repel forces between like-type charges are 'driven' apart. Charge forces are generated and applied from charge interactions between only 2 mono-charges that follow a combined, modified and simplified Newton-Coulomb's Force Law and Rules of:

$$F = C_1 * C_2 / R^Z \qquad \textbf{Equation 1}$$

where C_1 and C_2 are the 2 respective charges in the interaction and the combined Z relativistic exponent is a function of its charge strength and relativistic effects. The combined Z exponent is equal to 2 in normal SPACE with mixed charge strengths and bound charges (i.e. low velocities). In later papers the effect of Z on these interactions will be further discussed. More direct for this discussion is that R is the distance between the 2 respective mono-charges in any charge interaction causing a generated and applied force on both charges. In addition, the charge force rules are: like-type charge interactions generate repel forces; and opposite type charges generate attraction forces. If the mono-charges are sufficiently charge force bound together, then the collective determined forces of all MCs in a given matter body can be netted, for a singular applied $F_{\mathbf{net}}$. Conversion factors and constants are not shown for any equation.

Charge domination of all matter formation, from simplest particles to the most complex molecules and mass bodies, occurs because not all mono-charges have the same charge strength and force projections. Thus the constituent mono-charges' charge strength and order of joining matter are important. It is rare that overall neutral matter, at any level, has exactly the same charge strength distributions of its mono-charge types, thus most all matter has a dominant charge type that is driving its properties and behavior.

Intrinsic, inertial mass comes directly from the instant (relativistic impacted) charge strengths of each mono-charge in a body of matter. Each MC responds to an applied force per a modified Newton's 2nd Law given in Equation 2.

$$\mathbf{a = F / m \Rightarrow F / Ꞓ} \qquad \textbf{Equation 2}$$

Where Ꞓ is the absolute value of charge strength of each MC and, if the internal charge forces bonding them together is strong enough, is collective for a given matter; F is the generated and applied force on each mono-charge or collective particle or matter of mass, m. Acceleration, a, is the result of that applied net force on each independent mono-charge, singular or collectively if bound to others within a matter body.

Discussion of the Cause of Gravity

Examples showing the evidence of 'gravity' force (i.e. net charge forces) at the most basic mono-charge building blocks of the Universe are given in **Cases A, B, C and D**, shown in increasing complexity. A static configuration of the particle is shown with no external forces affecting it. Then the particle's configuration is shown an immediately after interacting with an external mono-charge, charged particle or a neutral mass particle.

Case A shows the simplest example of an overall neutral elemental particle with only 2 joined mono-charges having exactly the same charge strengths of each charge type (simplest possible, with no charge domination). **Case B** shows the example of an overall neutral particle with one positive charge (same strength as in Case A), but now neutralized by many weaker opposite type mono-charges. This is more realistic, but having an extreme positive charge domination. **Case C** shows more complex interactions, resulting net forces and reactions between 2 neutral mass particles, each having variable mono-charge strength constituents.

Also, both particles having the same charge type domination. **Case D** shows the same neutral mass particles as in Case C, but with opposite charge dominations.

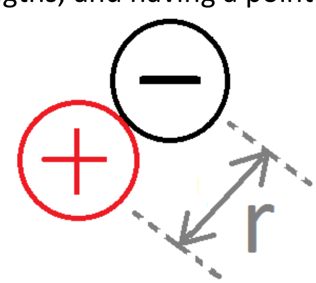
In all cases, it is assumed that the subject independent particle is not rotating or moving at the time of interaction, and are not bound to other matter. It is also assumed that the external charge is not moving at relativistic speeds into its closest position, which would distort its charge force projection. And it is assumed that the external charge does not have sufficient charge strength at its closest distance R to cause disassociation or de-joining of the internal constituent mono-charges forming the subject particle. Note that the introduced external charge and the particles can be of either charge type.

It should be noted that each charge interaction and generated/ applied force occurs only between 2 individual mono-charges. However, for descriptive simplicity the interactions with many weak charges are grouped together at a central mass / charge to simulate or approximate their interactions and reactions.

Case A

Case A shows the simplest evidence of gravity where the 2 opposite charge type mono-charges have exactly equal charge strengths and are thus charge force bound to form a simple elemental particle, shown in Figure 1. This is a classical 'di-pole' that, in MC Physics' terms should more accurately be called a 'bi-charge' or 'di-charge' elementary particle. In this very rare case the di-charge particle has no charge type domination and the stable particle is overall completely and exactly charge neutral, as required by Nature. Even then, there is a small positive distance, r, separating those charge-force-bound, opposite charge-type, single-point mono-charges. That separation distance causes unequal forces around that particle when interacting with an external charge, even though it is exactly overall charge neutral.

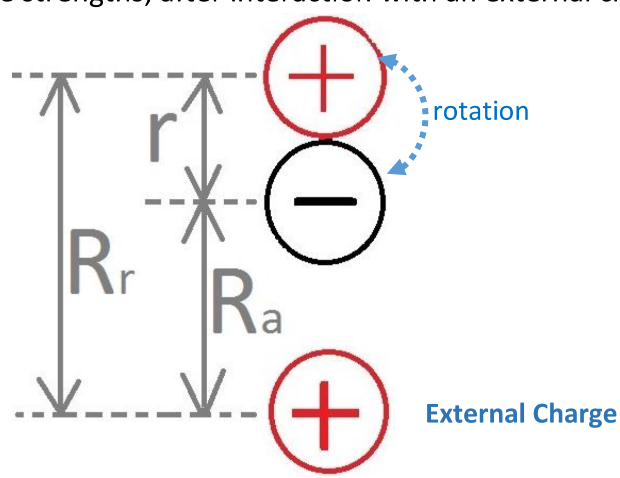
Figure 1: Case A- Simplest elemental particle of 2 opposite charge type mono-charges with exactly equal charge strengths, and having a point charge separation distance of r.



Next for Case A an external positive mono-charge or distant net charge-imbalanced particle is introduced. At distance R to the subject particle, that external charge generates an attraction force to the negative mono-charge in our subject particle that pulls each together. At the same time that external charge generates a repel force to the positive mono-charge within the subject particle that pushes each other away. The internal attraction charge force keeps the mono-charges within the subject particle joined together and the subject particle whole. This force differential immediately causes the subject particle to rotate to the position shown in Figure 2, at the same R position apart. This new configuration minimizes repel forces (maximizes distance of like-like type interactions) while it maximizes attraction forces (closer or minimize distance of opposite type interactions). This is straight forward, simple charge forces causing induction, i.e. movement of charges, that occurs in our higher, more complex matter.

Comparison of the resultant differences in the attraction force distance R_a versus the repel force distance R_r in this Case A interaction shows that ***Ra< Rr must always occur in these conditions***. In the modified Newton-Coulomb Force Law given in Equation 1, by inserting identical charge strengths for C_1 and C_2 means that attraction Force must be greater than repel Force. ***Therefore the subject particle's constituent mono-charges' separation distance, r, causes the attraction force distance to be less than the repel force distance for a net attraction force benefit. This is NET charge force as evidence of the real force of gravity at the most basic universe level.***

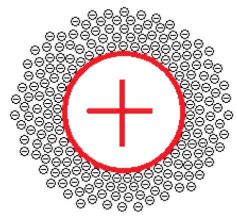
Figure 2: Case A- Simplest particle of 2 opposite charge type mono-charges of exactly equal charge strengths, after interaction with an external charge.



Case B

Case B is more realistic, but taken to the furthest opposite charge strength distribution extreme causing a strong positive charge domination of the subject particle, shown as a static neutral particle in Figure 3. In Case B the charge strength distribution of the charge types of the subject particle is highly uneven between the charge types. The dominant positive mono-charge is the same as in Case A, but the negative mono-charges individually have much less charge strength that requires many more of them to charge balance or neutralize the single positive mono-charge. Note that just the opposite charge type arrangement and other charge strengths are also valid.

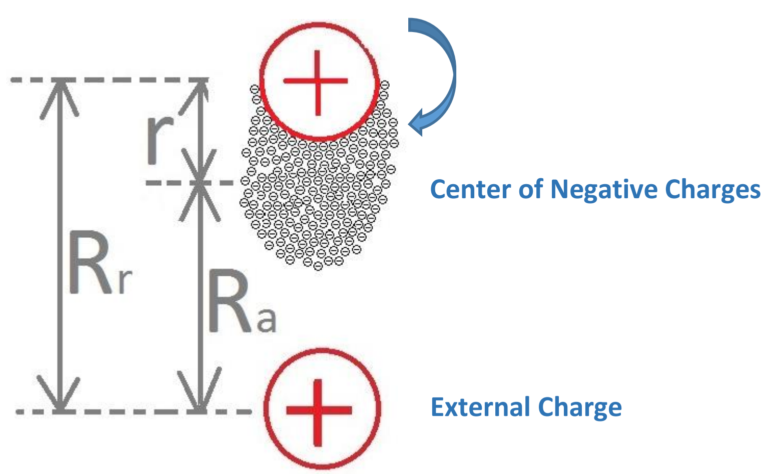
Figure 3: Case B- Static, charge neutral mass particle with a strong positive charge type domination.



In this static particle example the weaker negative mono-charges repel each other, but are attracted to the strong single positive mono-charge. Therefore the weak negative mono-charges move to completely surround the single positive mono-charges with various degrees of independent kinetic energy movement. Each MC interaction within the subject particle has a separation distance, r.

When an external positive charge is introduced in Figure 4 for Case B, the weaker strength, higher KE opposite-type negative mono-charges are immediately attracted to and move towards the opposite charge type external charge on the closest side of the particles' dominant positive mono-charge. As noted previously, for convenience and not accuracy, those weak negative mono-charges are assumed to have a collective center of mass and charge. As expected, the like-type positive charges are repelled by repel charge force. Per the stability requirement, the internal binding charge forces are sufficient to keep the particle whole. This induction movement of the weaker charges again causes a resultant distance difference, possibly more than in Case A, between attraction charge interaction distance Ra and repel interaction distance Rr. Using Equation 1 again, this give the net charge force advantage to attraction force- ***net charge forces seen as attraction gravity force to win once again***.

Figure 4: Case B- Overall charge neutral particle with high positive charge domination, shown after interaction with an External Charge



Case C

Case C shows charge interactions and generated / applied charge forces between 2 identical mass particles that are each overall charge neutral. Both have the same singular charge type domination and various opposite charge type mono-charge strengths. The static configuration of the subject particle is shown in Figure 5 and their new configuration immediately after that interaction is shown in Figure 6.

Figure 6 shows the more complex interaction of those 2 identical mass particles in Case C. The weaker charges have more KE and are more dispersed without a focal charge, mass or force point, than do the other stronger charges, as seen everywhere in Nature. Therefore, the weakest interactions are between those dispersed mono-charges groups in both particles.

Figure 5: Case C- Static case of a Mass Particle with various mono-charge strengths, Positive Charge Type Domination.

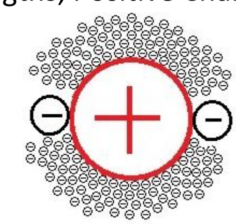
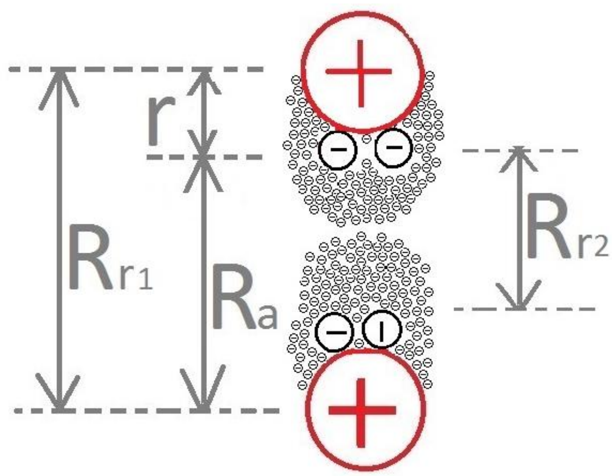


Figure 6: Case C - Interaction of 2 identical Mass Particles with various Charge Strengths and same Charge Type Domination



Note that there are now 2 different repel charge force interactions ($F_{\mathbf{r1}}$ and $F_{\mathbf{r2}}$, at respective distances of $R_{\mathbf{r1}}$ and $R_{\mathbf{r2}}$) and 2 identical attraction charge force interactions between opposite charge types (both at $R_{\mathbf{a}}$ distance) between the particles. A net force summary is given in Equation 3.

$$F_{net} = 2F_a - F_{r1} - F_{r2} \qquad \textbf{Equation 3}$$

Note that both F_{ra} and F_{r2} are impacted by dispersion of the weaker charges, with F_{r2} doubly impacted on both sides, but at closer range. If a collective fractional dispersion factor, d, is used to account for the collective dispersed weak charge's reduced strength, then the interaction force summary for Case C would be Equation 4. Equation 1 can be substituted into Equations 3 and 4 to determine F_a, F_{r1} and F_{r2} from their respective equal charges and specific distances, with z assumed to be 2, shown in Equation 5.

$$F_{net} = 2*d*F_a – F_{r1} - d^2*F_{r2} \qquad \textbf{Equation 4}$$

$$F_{net} = (2*d*\text{Ͼ}^2/R_a^2) – (\text{Ͼ}^2/R_{r1}^2) – (d^2*\text{Ͼ}^2/R_{r2}^2) \qquad \textbf{Equation 5}$$

Since $2d > d^2$ (for $d<1.0$) is always true, this tips the balance of F_{net} further toward net attraction charge force. Thus, a (possibly any) ***charge domination results in a dispersion and distance differential of forces in favor of net attraction force, that we call the 'force of gravity'***.

Case D

Case D shows charge interactions between 2 identical mass particles that are each overall charge neutral, as in Case C, but now with opposite charge type dominations. Their interaction is shown in Figure 7.

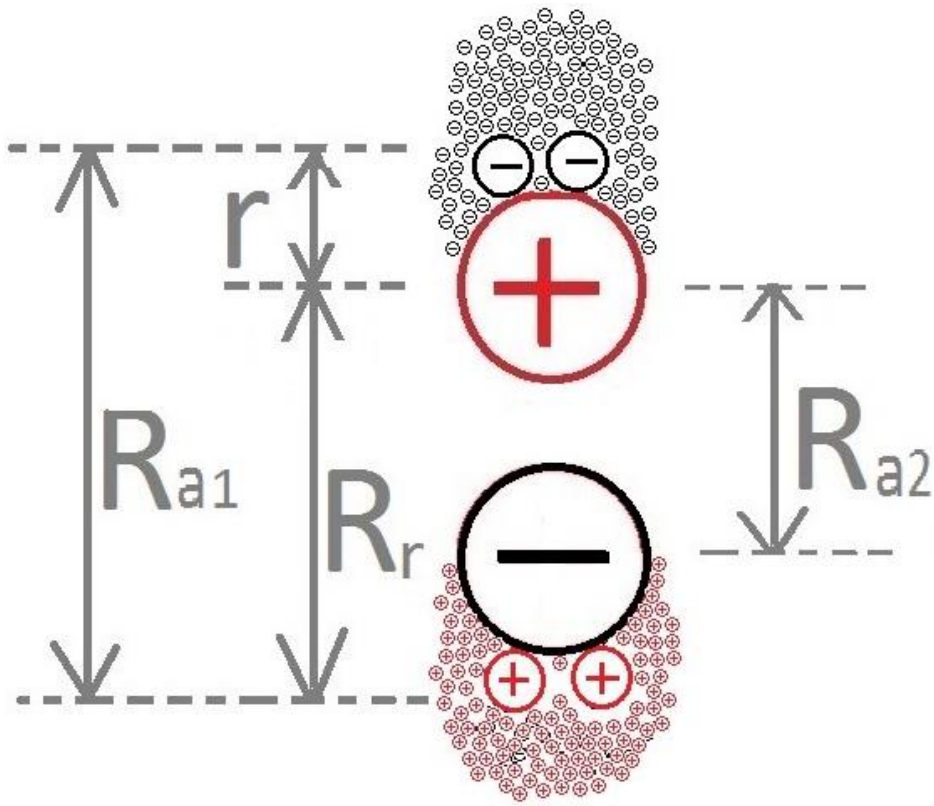
The summary force equation for Case D, similar to Case C's Equation 4, is given in Equation 6 and expanded into Equation 7.

$$F_{net} = F_{a2} + d^2*F_{a1} – 2*d*F_r \qquad \textbf{Equation 6}$$

$$F_{net} = (\text{Ͼ}^2/R_{a2}^2) + (d^2*\text{Ͼ}^2/R_{a1}^2) – (2*d*\text{Ͼ}^2/R_r^2) \qquad \textbf{Equation 7}$$

F_{a2} is for the very close, stronger charges that are singularly focused. Fa_1 is between the most distant, weaker and unfocused charges on both ends. F_r is between mixed (on all counts) charges with some dispersion on both interactions. The closest, singular focused (i.e. not dispersed) strong charges in F_{a2} tilt the net force to attraction, again seen as the attraction force of gravity.

Figure 7: Case D- Interaction of 2 identical Mass Particles with various Charge Strengths and opposite Charge Type Domination



To understand the range of applicability of both Case C's Equation 5 and Case D's Equation 7, various relative values were assumed for charge strengths, distances apart and dispersion factors and used in those equations. Positive or attraction $F_{\mathbf{net}}$ values were calculated for many assumed values and conditions, which leads credence to the MC Physics reasoning for understanding gravity forces at this basic level. But since real strength and distance data at this level of matter is non-existent, that evaluation needs more analysis and will be published later.

From this analysis it should be recognized that gravity is just the simple and well known charge forces causing induction processes (i.e. charge movements) that we see at work at our higher level of matter, but now applied at the most basic and elemental level in the Universe requiring mono-charges. This finding also follows the natural progression of matter- start with simple basic components that grows in complexity with multiple combinations.

Those given basic examples of charge force/ induction processes can be applied in all charge type and charge strength combinations, of either charge dominations. That concept also can be applied in more complex higher matter formations with expected diminished net force differentials. This diminishing net force strength with increasing matter complexity fits the reported diminished strength of gravity estimated as X 10^{-41} that of measured net quark particle charge force strengths, per https://en.wikipedia.org/wiki/Force .

These findings also fit within the MC Physics concept of the Universe having a CHARGE-FORCE-SPACE-TIME-SPIRIT architecture. CHARGE was quantized in the earliest Universe into mono-charges, possessing a charge type (either positive or negative) and a charge strength or potential. Those mono-charges then caused and still cause all force in the Universe, as all forces (even the real net force of gravity) are unified as all charge derived, with possible relativistic impacts. During the cooling Universe, mono-charges formed and still form all matter using those forces. The charge strength of each mono-charge gives it real intrinsic, inertial mass.

Conclusions

1. Four examples of increasing matter and interaction complexity demonstrat that the force of gravity, at the most basic, elemental level of the Universe, is just simple net charge interactions and applied charge forces causing induction processes (i.e. charge movements).
2. Understanding the force of gravity at that most basic Universe level requires the existence of mono-charges, with their given properties.
3. The required separation distance between mono-charges provides the first cause of that net force imbalance towards attraction gravity force.
4. Any imbalance in the charge strengths of the mono-charges within any neutral matter, causing a charge domination of that matter, provides an additional distance difference ($R_{\mathbf{repel}} > R_{\mathbf{attract}}$) in charge interactions between matter for a resultant net attraction charge force, or gravity force between that matter.
5. The examples given for demonstrating gravity forces at the most basic universe level are representative of <u>ANY and ALL charge strength combinations and/or charge type dominations</u> that are possible to form known matter.
6. Force is ONLY generated by charge interactions between 2 mono-charges. Those mono-charges can be in the same or in separate mass entities or bodies, in which they are charge force bound. That singular (although continuous) interaction causes a generated then applied force on ONLY those 2 interaction mono-charges, which then causes movement and/or force transmission to other nearby bound mono-charges for full matter entity reaction and movement. Collectively, this is seen as gravity force.
7. Seen even within the simple particle examples given, as the complexity of matter interactions increases into atoms, molecules, large bodies, planets, stars and black holes, the displacement or movement of joined weaker mono-charges gets more complex and the net attraction charge force of gravity is diminished.
8. The existence of mono-charges better explains the behavior and properties of real photons of light and radiation, how matter formed during a cooling Universe, and force unification as all forces are CHARGE derived, including gravity forces.

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