

# An idea about the forces

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All of the forces may be a reflection of electromagnetic force in different scales, if the opposite charges attract was very faintly larger than like charges repel.

About various forces<sup>1</sup>, including van der Waals force<sup>2-4</sup> that has not been thoroughly understood, here a crude idea was that if in electromagnetic force the opposite charges attract was very faintly larger than like charges repel, i.e.

$$e^-e^+ > e^+e^+ \text{ or } e^-e^-,$$

it could give rise to van der Waals force:

$$F = 2n(e^-e^+) - n(e^+e^+ + e^-e^-),$$

where  $n$  is an integer and  $e^-$  or  $e^+$  is electron mass ( $9.10938356 \times 10^{-31}$  kg,  $5.48579909070 \times 10^{-4}$  u,  $\sim 1/2000$  of proton mass).

Whereas this seems to concern nucleon (elementary particle) structure, which is too wide to further interpret. Briefly, to widen to gravitational and nuclear strong, weak forces, a premature formula was:

$$F = k[2n(e^-e^+) - n(e^+e^+ + e^-e^-)] / r^{1-10},$$

where  $k$  is a mix of **gravitational** and **Coulomb's constant**, if possible, and  $r^{l-10}$  is not inverse-square ( $r^2$  that Kepler has proposed<sup>5</sup> in 1612) (e.g.  $F = A / r^2 + B / r^3$  of Clairaut<sup>6-7</sup>) that was a function of distance from  $10^{24}$  m to  $10^{-24}$  m (e.g., gravitational scale,  $r^{l-2}$ ; van der Waals scale,  $r^{2-3}$ ; nuclear scale,  $r^{7-8}$ ). But a very hard problem is that how to estimate and balance a value of  $k$  and  $r^{l-10}$  now.

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