

# Nuclear Forces and Nuclear Structure

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Abstract: shows the most fundamental nature of the nuclear force and the nuclear overall structure.

## Main viewpoints and conclusions:

The most fundamental nature of nuclear forces is the polymerization by electrostatic attraction -- electrostatic forces; and the basic structure of an atomic nucleus is in a similar frog-eggs structure. <sup>[1][2][3]</sup>

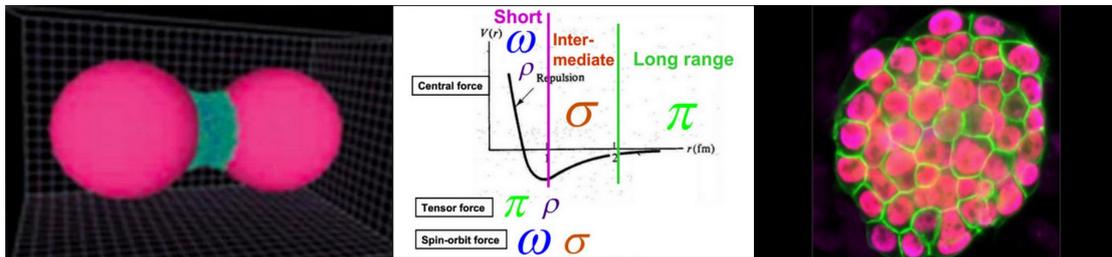


Image 1. shows a light nucleus

Image 2. features of nuclear forces

Image 3. shows a heavy nucleus

*These images selecting from internet, many thanks to the authors of the images and the articles*

For instance, a Deuteron consists of a neutron and a proton; and a neutron consists of a proton and a  $\pi$ -meson; that is a Deuteron consists of two protons and a  $\pi$ -meson, and the two protons (red) are glued together by one  $\pi$ -meson (green) forming into a Deuteron.

Generally,  $A (\geq 2)$  protons are glued together by  $N$   $\pi$ -mesons and then formed an atomic nucleus; or in another perspective,  $A (\geq 2)$  protons are glued together by the body which consists of  $N$   $\pi$ -mesons and forming into an atomic nucleus. <sup>[1][2][3]</sup> a light nucleus shows molecule-like behavior due to it has a lower proportion and content of neutrons and  $\pi$ -mesons (tending towards the crystalline state); a heavy nucleus takes on a liquid-like behavior due to it has a higher proportion and content of neutrons and  $\pi$ -mesons. <sup>[7]</sup>

## References

[1] *The structure, property and parameters of nucleons* <http://vixra.org/abs/1503.0121>

[2] *Nuclear physics: statistical analysis of isotope masses.*

<http://mb-soft.com/public2/nuclei6.html>

[3]  *$\pi$ -mesons and the structure of an atomic nucleus* <http://vixra.org/abs/1405.0228>

[4] *The source of the image 1*

<http://www.nature.com/news/near-earth-asteroid-held-together-by-weak-force-1.15713>

[5] *The source of the image 2* [http://www.scholarpedia.org/article/Nuclear\\_Forces](http://www.scholarpedia.org/article/Nuclear_Forces)

[6] *The source of the image 3*

<https://www.sciencedaily.com/releases/2015/01/150105142118.htm>

[7] *How atomic nuclei cluster*

<http://www.nature.com/nature/journal/v487/n7407/full/nature11246.html>