

Re: Why don't protons attract due to gluons and only with neutrons?

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Source: <http://sci.tech-archive.net/Archive/sci.physics.relativity/2006-07/msg00422.html>

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 - *Date:* 4 Jul 2006 06:26:45 -0700
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guskz@xxxxxxxx wrote:

PD wrote:

guskz@xxxxxxxx wrote:

1. Why aren't protons attracted to each other due to gluons?

They are.

They also repel each other electrostatically.

In balance, two protons will not be held together sufficiently without additional gluon-contributors such as neutrons.

2. Why are protons ONLY attracted to neutrons due to gluons?

They aren't. They attract neutrons AND protons due to gluons.

3. Are neutrons attracted to other neutrons, if so why?

Yes, they are. However, neutrons can also decay into a proton, an electron, and a neutrino, if that is energetically favorable. A proton and a neutron happen to be a more energetically favorable bound state than a two-neutron bound state.

You may want to look up "valley of stability".

On a plot of A vs Z , you'll see that too much Z for the same A is unstable -- this is explained above by electrostatic proton-proton repulsion.

So your real question is, why are too many neutrons also bad? Why is

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too much A for the same Z also unstable?

PD

What's an A and a Z?

A = atomic mass = number of protons + neutrons

Z = atomic number = number of protons

A-Z = number of neutrons

Notice the chart of the valley of stability will likely be a plot of A vs Z or (A-Z) vs Z.

PD

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