Re: Is electromagnetic field theory unified?

Source: http://sci.tech−archive.net/Archive/sci.physics/2005−03/2281.html

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From: Ken S. Tucker (*dynamics_at_vianet.on.ca*)
Date: 03/04/05

Date: 3 Mar 2005 18:48:23 −0800

Mr. Hogg
Your was so good it felt like an X−mas gift,
so I wouldn't interrupt in the middle.

Creighton Hogg wrote:

> *On 2 Mar 2005, Ken S. Tucker wrote:*
> > *Well the point is a field is quite able*
> > *to rip apart an Fe nucleus, ie. N−stars,*
> > *so now we're discussing brittleness and*
> > *elasticity of that nucleus.*

> *Okay, but pulling apart a nucleus doesn't directly have anything to*
do
> *with gluon exchange. The force *between* nucleons is given by the*
> *exchange of colorless combinations of quarks and gluons, for example*
> *pions. This was how the pion was first predicted I believe, before*
strong
> *interactions were understood as well as they are today. That being*
said,
> *there is still alot of work being done today to connect QCD with*
observed
> *nuclear physics. It's a non−trivial task. However, my point here is*
that
> *the interactions between *nucleons* are not going to exhibit*
> *hadronization, fragmentation, and confinement because all objects*
involved
> *are colorless combinations of other particles. So let's go a step*
lower
> *in scale.*
> *There's something called deep inelastic scattering that has been*
studied
> *at HERA, an electron/positron proton collider where Zeus is an*
experiment.
> *Now, what happens is that you have an incoming electron exchanging a*
> *virtual photon with one of the quarks in the proton. This photon is*
> *exchanging a very large momentum between the two, so it is very short*

> *wavelength. In essence, it doesn't see the proton as a solid object,*
but
> *as a bag of valence quarks, gluons, and quark anti−quark pairs. Now,*
when
> *this photon is absorbed by one of the quarks, it kicks it out hard*
and
> *fast from the proton. Now, this is where confinement and all that*
stuff
> *like the string model come in. The quark that was kicked out is*
still
> *interacting via gluon exchange with the rest of the proton, and you*
can
> *model this by a string of *constant* tension connecting the quark*
with one
> *of the other particles in the proton. As this string gets longer, the*

> *total energy contained in the string grows, since the energy*
contained is
> *essentially the tension times the length of the string. Eventually,*
if
> *the quark was kicked out hard enough, it will become energetically*
> *favorable for the string to "snap" and create a particle*
anti−particle
> *pair. So what you get now is two shorter strings with a quark on*
each end
> *of them. This is the basic picture of fragmentation. Let this*
process
> *keep repeating until eventually the strings are short enough and the*
> *momenta similar enough that all the particles connected by strings*
are
> *going to recombine in a process called hadronization. The end result*
of
> *this process is something called a hadron jet. Jets are very*
important to
> *measurements in modern particle physics.*
> *Now, what was the point of this entire digression? Well, my point is*
that
> *the idea of "elasticity" may work on the level of a whole nucleus,*
I'm
> *not sure really, but on the level of the individual protons and*
neutrons
> *it is going to fail in high energy interactions. Also, gluon*
behavior is
> *not elastic. Elastic implies a force growing over distance, which*
isn't
> *right. What you're seeing in the production of jets is the effect of*

> *gluon screening, essentially it's because gluons themselves carry*
color
> *charge and interact with themselves.*

Thanks
I see, my use of the word "elastic" is
inappropropiate and that's good of you
to point out, I'll resubmit, "nuclear distortion".

The point is in the neighbourhood of neutron stars
even Fe nuclei are distorted. In that field it's
difficult to say that it's gravity or EM, without
a good unified field theory.

What's the energy (or deficit), when an Fe nuclei
smacks into a n−star, and "hadronizes"? (released).
((I'm all balled up with the recent Dec 27/04 gamma
burst, I'm even studying whether the Dec 26 earth
quake may be related, damn it, is it an unlikely
coincidence or related phenomena, send me your
extra IQ, I'll need it)).
Ken S. Tucker