Re: Bending of light not well authenticated

Source: http://sci.tech−archive.net/Archive/sci.physics.relativity/2005−05/msg01718.html

- *From*: "Koobee Wublee" <kublai@xxxxxxx>

- *Date*: Sun, 22 May 2005 23:32:28 −0700

"Gene McGraw" <emcgraw@xxxxxxxxxx> wrote in message
news:42910e8c.19500515@xxxxxxxxxxxxxxx
> On Sun, 22 May 2005 "Koobee Wublee" wrote:
>>By minimizing integral of dt, the equations of motion ... are
>> (r dH/dt)^2 / c^2 = (1 − 2 U)^2 b^2 / r^2
>> (dr/dt)^2 / c^2 = (1 − 2 U)^2 (1 − (1 − 2 U) b^2 / r^2)
>
> Yes, we've established that. These equations defines the light−like
> paths in the vicinity of a spherically symmetrical gravitational
> field. All we need to do now is check to see how much deflection
> there is for a path that grazes the edge of the sun. The perihelion of
> the light path is a distance R from the center of the field, where R
> is the radius of the sun. It follows (from the second equation at the
> perihelion, where dr/dt = 0) that the constant of integration is b =
> R/sqrt(1−2U). Then integrate dH/dr to give the total angular travel as
> the ray of light goes from r = infinity down to r = R, and then back
> to r = infinity. The result is pi + 4GM/(Rc^2), so the deflection is
> 4GM/(Rc^2).

Yes, again, I have agreed that we have arrived at that. Since you do not understand what this R is, I will use your terminology. Your R is the value of perihelion and not the radius of the sun. Radius is considered here for simplicity. Since you do not even know what R is which again R is not the radius of the sun, your integration of dH/dr from infinity to R is totally bogus. To do the integration properly, you have to know what R is as accurate as the expected angle of deflection which you have memorized to be (4 G M / c^2 / R).

>>However, these only represent half of the equations of motion...
>
> No, the equations of motion are the equations of motion. They
> identify, for any coordinate time t, the radial position r and the
> angular position H of the path. This completely defines the path in
> terms of these coordinates, which uniquely identify each time and
> place.

See. Your understanding of GR is not complete. In every spacetime equation, there are always two sets of equations to describe the motion of

the event. One is the observed frame which is subject to the curvature of spacetime, and the other one is the proper frame where there is no distortion. These two sets of equations must match at where (U= 0). Do you even undersand how the spacetime equation is derived from Lorentz Transform (in flat spacetime)?

> The rest of what you have typed is gibberish. Most of your sentences
> don't even parse, let alone make any kind of mathematical or physical
> sense.

I am surprised you are not exposed to papers emphasized on mathematical values, and that is the style I used to make things more understandable. Well, some folks just are a little slow. Why don't you go back to study what I wrote, and we will discuss it further if you like and provided you have understood what I wrote which should be a piece of cake to some one with moderate understanding of mathematics.

> The parameter R is the minimum distance from the path of light to the
> center of the gravitational field. When we examine the deflection of
> starlight grazing the surface of the Sun during an eclipse (for
> example), the value of R is simply the radius of the Sun. Do you
> understand this? The value of R is known; the unknown we are
> trying to find is the integral of dH for any given R. The result is
> pi +4GM/(Rc^2).

I understand what you are claiming. What I have been trying to tell you is that your concept is wrong because if the mass of the sun were to be any larger, the photon cannot escape from the sun. There would be no deflection because the photon is captured by the sun. What you are claiming is erroneous that your claiming does not allow the sun with a higher mass to capture the photon. Your definition of R should be a function of (G M / c^2). Do you understand this?

> You seem to be looking at the problem backwards, as if you are
> starting with a straight ray of light in flat spacetime, and then
> inserting the Sun and trying to calculate how far the ray of light is
> deflected. In other words, is seems that you are thinking of the
> parameter R as the distance from the ray of light to the origin of
> flat spacetime, and then you are imagining placing the Sun at the
> origin and seeing the amount dR that the light ray deflects, almost
> like a clothes line being held at the ends, with the Sun pulling on it
> in the middle. If this is indeed what you are thinking, then you are
> completely misguided. Rays of light are not clothes lines. You need to
> go back to grade school science class and understand how rays of light
> propagate. It's futile for you to be trying to understand general
> relativity, lacking the equivalent of a grade−school understanding of
> basic physics.

You seem to have memorized how Einstein (if indeed he was the originator of this nonsense about photon bending derivation) came up with this nonsense and without actually understood the detailed mechanisms involved. In the

derivation, there are a few necessary steps of simplification, and yet you have not qualified the validity of these simplifications. You are totally lost. I suppose there is no point in discussing Mercury's anomaly with you. Thanks for your time. Maybe after you have understood what I am talking about we can continue with our discussion.

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- ***Follow−Ups***:
  - ***Re: Bending of light not well authenticated***
    - *From:* Gene McGraw
- ***References***:
  - ***Re: Bending of light not well authenticated***
    - *From:* Randy M. Dumse
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    - *From:* ande452
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