Re: Circular motion in SR

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- *From*: rbwinn <rbwinn3@xxxxxxxx>
- *Date*: Sat, 15 Mar 2008 21:29:42 −0700 (PDT)

On Mar 14, 9:38 pm, Eric Gisse <jowr...@xxxxxxxxx> wrote:

> On Mar 14, 7:03 pm, rbwinn <rbwi...@xxxxxxxx> wrote:
>
> > > On Mar 14, 5:29ýpm, mL <mL.bey...@xxxxxxxxxxxxx> wrote:
> > >
> > > > ram.rac...@xxxxxxxxx wrote:
> > > >
> > > > > I'm trying to write the equations for circular
> > > > > motion according to SR
> > > > > laws of motion. I'm doing some kind of
> > > > > mistakes, because I'm not
> > > > > getting real solutions to the equations.
> > > > >
> > > > > This is what's going on: You have an body
> > > > > of mass m0 circling around a
> > > > > stationary center point that is a distance of r
> > > > > from the body. There
> > > > > is a force F that attracts the body towards the
> > > > > center point, making
> > > > > it move in a circle around it. What's the
> > > > > velocity v of the object?
> > > >
> > > > OK, you have a central force field, ýF_ = f(r)n_ , where the
> > > > unit
> > > > vector n_ points towards a fix point.

Use the equation dE/dt = F_.v_, to show that the energy E and the speed
v = |v_| are constants when the particle moves in a circle r = R.

ý> I've used these equations:
ý>
ý> v=sqrt(a*r)
ý> a=F/(m0*gamma^3)
ý> gamma=1/sqrt(1−(v/c)^2)
ý>
ý> I keep getting only imaginary solutions for v. What am I doing wrong?

The force−equation is wrong. For cases with constant rest mass m, you
have in general,

ý ýF_ ý= (gamma)ma_ + (gamma)^3 m(v_.a_)v_ /c^2 ,

which for circular motion, r = R, reduces to

ý ýf(R) = (gamma)m a, ýwhere ýa = v^2/R,

− note that v_.a_ = 0, i.e. a_ // n_, according to comments above.

/mel

My question about all of this is, since a clock in rotation supposedly runs slower than a clock around which the moving clock is rotating, then since the Lorentz equations give the velocity as being the same in both frames of reference, does the altitude of the rotating clock differ from one frame of reference to the other?

This is not a complicated question. Scientists have claimed that

> they put a clock in a satellite and recovered it, and the clock from the satellite showed less time than an identical clock on earth, so this proved that Einstein's theory was true.
> Any way you look at it, the velocity of the moving clock is the same from either frame of reference according to Einstein's theory. So with the distance contraction, the circumfrence of the orbit is less from the frame of reference of the satellite than from the frame of reference of the earth. How does a shorter orbit relate to the altitude of the satellite?
> I have posted this question many times, and, so far, science seems to be silent about this, just as they are silent about many things with regard to Dr. Einstein's famous theory.
> Robert B. Winn

Science has no problem with the concepts. Your whining is misguided − USENET seems to be silent with these things because USENET is tired of explaining things to you just to have the explanation ignored. USENET has figured out that decades of stupidity cannot be fixed.− Hide quoted text −

− Show quoted text −

Eric,
Here is what I think. I think that the altitude of the satellite is the same in both frames of reference. The reason for this is that the circumfrence of the orbit is the same in both frames of reference. The way we calculate this is by the equation, C=2(pi)r, where C is the circumfrence of the orbit. The secret to having the circumfrence the same in both frames of reference is the equation t'=t, which is from the Galillean transformation equations. So what about the clock being slower in the satellite?
Well, the time on that clock is not t'. It is n' where n'=t(1−v/w), and w is the velocity of light.
Notice that there is no distance contraction, the altitude of the satellite is the same in both frames of reference, and the clock in the satellite is running slower than the clock on earth, and the value of pi remains 3.14 in both frames of reference. Scientists are not going to like this.
Robert B. Winn
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