Re: Quiz

Source: http://sci.tech−archive.net/Archive/sci.physics.relativity/2007−12/msg02085.html

- *From*: Dono <sa_ge@xxxxxxxxxxx>
- *Date*: Sun, 30 Dec 2007 14:47:58 −0800 (PST)

On Dec 30, 11:06 am, Tom Roberts <tjroberts...@xxxxxxxxxxxxx> wrote:

> Dono wrote:
>
> > Let's assume v=.9c, the Doppler shift on approach will be:
> > fo=fe*sqrt ((1+v/c)/(1−v/c))=fe*sqrt(19) i.e. there is an upshift in
> > frequencies of about 4.2x
> > Since the visible spectrum is 400−790THz, a 4.2x shift will render to
> > object totally invisible, indeed.
>
> So it must be illuminated with broadband radiation, and your "eye" will
> select those rays that reach it with frequencies it can see (don't
> forget your UV−blocking sunglasses (:−)).

Yes.

> A much larger and essentially insurmountable problem is getting a
> shutter fast enough to make an image that is not completely blurred by
> the motion −− your eye definitely won't do.... (and if it's far enough
> away so the motion doesn't blur it, then angular resolution won't permit
> you to observe its shape...)

Raytracing can use an infinitely fast shutter, this is how it gets
around the motion blur. If the shutter is not infinitely fast, you get
indeed an integration effect over the duration of shutter opening
time. I think that the simulations I showed use an infinitely fast
shutter since the images exhibit no motion blur.

> So this is essentially a gedanken that depends on an "eye" that is
> unrealizable in practice. That is inherent in the style of the original
> problem.
>
> Tom Roberts

Correct. The MIT problem is very tough since it requires a lot of knowledge about unrelated fields (raytracing and relativity).

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