To: Lisa Randall[redacted]
From: Jeffrey Epstein
Sent: Sun 10/4/2009 4:34:02 PM
Subject: Re:

2pm?

On Sun, Oct 4, 2009 at 11:21 AM, Lisa Randall <[redacted]> wrote:

Any availability in the spacetime continuum today or tomorrow?

Jeffrey Epstein wrote:

joking, for me , space and time are disconnected as my fingers hunt for keys

On Fri, Oct 2, 2009 at 6:00 PM, Lisa Randall <[redacted]
<mailto:[redacted]>> wrote:

Oops. Problem of email. No offense intended. I was really a little confused. Or were you joking?

Jeffrey Epstein wrote:

sorry,
On Fri, Oct 2, 2009 at 5:41 PM, Lisa Randall
<[redacted]
<mailto:[redacted]>
<mailto:[redacted]
<mailto[redacted]>>> wrote:

I think I'm reaching the limits of my ability to disentangle grammar
and spelling but here goes:

Jeffrey Epstein wrote:

thanks , question , what does it look like if time is running
backward , wouldn't it be decelerating,, into flat space from
the singularity outward,, therefore explosion than

[then]
expansion.
It looks like big bang, not inflation before horizon. So not explosive expansion.

but always slowing after

crossing the horizon .

after crossing horizon there isn't really a cosmological interpretation anymore. Time and space have switched back.

looking in reverse it appears things accelerate

as they approach,, charged would be as a result of the deceleration.

don't understand this last comment.

On Fri, Oct 2, 2009 at 5:27 PM, Lisa Randall <[redacted]
<mailto[redacted]>
<mailto[redacted]
<mailto[redacted]>>
<ma[redacted]
<mailto:[redacted]>
<mailto:[redacted]
<mailto:[redacted]>>>> wrote:

Hi Jeffrey. It was interesting-as always.
For your question, let's first straighten out that there are
3 types
of bhs we might be discussing: Schwarschild, charged, and Kerr. I
didn't say much about Kerr--I mostly discussed charged--since they
are changing with time and a bit more complicated but indeed they
have 2 horizons (just like charged black holes).

Two horizon scenario means time and space switch twice so at
singularity you are back to ordinary time space identification. So
let's first just consider Schwarschild (uncharged, not rotating). In
that case you are on the right track. Reversing time and coming from
the singularity, it pretty much looks like a 2d big

bang scenario
(with the other 2d in a compact sphere). Space expands out until you
reach the horizon and eventually goes over into flat space.
It's not
really accelerated expansion but still somewhat along lines you
suggested.

If there are two horizons (charged black hole case) and you
are in
between them (we called this Whoville becuase it looks like space
has shrunk to zero but actually spacetime has not and there is a
finite time between them so there's a whole world invisible
to the
outside) what happens is you alternate between big bang and big
crunch in the full extended spacetime.

Jeffrey Epstein wrote:

Lisa . thanks,, for your time,and patience if i understand the
Kerr equations , and your explanation correctly , time and space
appear to exchange coordinates , inside a black hole. ,
that
assumes that time is unidirectional. doesn't it appear that if
you ran negative time , it would look like any other explosive
transaction. great acceleration. emenating from the second
horizon outward slowing to a mere expansion . It would
appear
that " time" got shot out of the black hole. created by a
space

collapse at the singularity.

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