

Re: Einstein's math and physical objects

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"Todd" <nope@nospam.com> wrote in message
news:05wGd.9492\$eT5.4591@attbi_s51...

>

> "harry" <harald.vanlintel@epfl.ch> wrote in message

> news:1105888400.022235.231360@c13g2000cwb.googlegroups.com...

>> [Tod]:

>> *"Let me avoid the acceleration by bringing about the final state in a*

>> *somewhat different way. Imagine that the disks are at rest in frame B*

>> *and*

>> *the disks are not rotating. Diametrically opposite wires connect the*

>> *disks*

>> *as before. Frame B is moving in the positive x-direction relative to*

>> *frame*

>> *A. Thus, A sees the disks sliding in the positive x-direction, not*

>> *rotating, and the wires parallel to the x-axis."*

>>

>> *Oh oh, I'm afraid you now messed up – for without rotation the wires*

>> *are simply crossed for all observers.*

>> *This isn't going to help...*

>>

>> *Harald*

>

>

> *I still think I'm right! But maybe you can explain where I'm going wrong.*

I now see that I misread diametrically for diagonally! Sorry.

> *I'm not sure what you're referring to when you say 'without rotation'.*

> *There is no rotation initially, but there is rotation in the final state.*

>

> *Again, the disks are initially sliding along the x-axis in frame A with no*

> *rotation. The wires are strung between them parallel to the x-axis.*

Frame

> *B sees the disks and wires all at rest – no sliding and no rotation.*

OK, thus wires parallel along x and x'.

- > Now, we introduce the rotation. More precisely, we imagine that torques are
- > applied to the two disks _simultaneously in frame A_ so that the disks
- > obtain identical rotations simultaneously in frame A. No external torques
- > or forces are applied to the wires. The wires feel only their internal
- > stresses and the forces of attachment to the disks.
- >
- > Imagine what happens in frame B. Due to relativity of simultaneity, the
- > disk that has the greater x -coordinate starts rotating first. In this
- frame
- > the disks are not sliding. So, it's just like you where holding the disks
- > in front of you and turning one of the disks without turning the other.
- So,
- > in frame B the wires will assume a simple crossed configuration.

Right.

- > Once the
- > other disk also begins to rotate in frame B, no further twisting of the
- > wires will occur and the wires and disks simply maintain their crossed
- > configuration while the whole thing rotates (from the point of view of B).

Exactly. That is non-relativistic mechanics.

- > In frame A, the final configuration of the wires must be the Lorentz
- > transform of the configuration in B. If I'm not mistaken, this will be
- the
- > conical helix shape. Any points where the wires touch in B, they will
- also
- > touch in A.
- >
- > Todd

OK I'm again with you! Indeed this is the same end condition as the original paradox.

As mentioned before, the problem of the paradox is to identify the centripetal forces on the wires in frame A.

Harald