

## Re: the ether paradocs

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- *From:* Paul Sholtz <paul123@xxxxxxxxxxxxxxxxxxx>
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On 2005-06-09 20:56:27 -0400, Tom Roberts <tjroberts@xxxxxxxxxxx> said:

Positing an UNOBSERVABLE "preferred frame" is silly. If it is not unobservable, then where is it? -- how can one determine it inside a closed room from which all external influences are excluded?

Tom Roberts tjroberts@xxxxxxxxxxx

Nature does "prefer" certain reference frames over others, though.. i.e., all things being equal, it's simplest to do physics from inside an inertial frame, rather than a non-inertial frame (for what should be obvious reasons). One *issue* I've always had w/ Einstein's formulation of SR is that he assumes inertial frames are a dime a dozen, and you can just measure motions and velocities relative to 2, 3, .., n different inertial frames and voila! Look at all the magic that drops out of the equations!

In making such an assumption, I believe Einstein might be building an imaginary universe (inside his head) that may or may completely correlate w/ the real Universe we inhabit and observe and measure phenomona in. Are there really an arbitrary number of inertial frames in the Universe? It would seem to be rather that there is at most ONE inertial frame in this Universe, and that finding this inertial frame would be tantamount to identifying the center of gravity in the Universe .. something I'm not sure anybody has done, or ever could do. There's already probably a (serious) ontological difficulty there, in the sense that you're already making an assumption that can you measure something that already is outside the bounds of human ability to ever identify or measure.

For instance, the surface of the Earth is not a perfect inertial frame. For many experiments, on sufficently small time scales, the surface of the Earth closely approximates an inertial frame. For instance, if Observer A is on a spinning merry-go-round, and Observer B is on the "fixed" earth, and A throws a ball, then A can only account for its motion using "imaginary" Coriolis forces.. something that B doesn't have

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to do b/c B is in the "inertial" frame.. i.e., the classic "coriolis" experiment.

But..... like I said, the surface of the Earth is not a perfect inertial frame. Why? b/c the Earth is spinning on its axis... Spinning relative to what? Well, the only we can answer this question (satisfactorily) is to identify an "inertial" frame, relative to which the Earth is (in fact) spinning about its axis, every 24 hours. Fix the inertial frame at the center of the Sun, and measure the rotation of the Earth relative to the center of mass of the Solar System, and you'll have a better approximation of an inertial frame. The Foucault Pendulum is an excellent example of an experiment that can detect this motion (the revolution of the Earth), and which cannot be explained w/in the context of Newton's Laws, unless you fix the inertial frame at the center of gravity of the Solar System (i.e., a Foucault Pendulum will appear to "precess" per "imaginary" Coriolis forces, unless you fix the inertial frame correctly).

In other words, Nature certainly seems to prefer certain inertial frames over others..

The issue of "absolute" motion has not been satisfactorily settled, imho...

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