

## Re: Proper quantities in SR

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Ken S. Tucker wrote:

I think Tom is unfamiliar with practical applications.

I think Ken does not know me at all.

It's common sense that two worldlines synchronized at a point of divergence must, at a later time converge to compare measurements, and that process requires relative +/- accelerations.

Except that in GR it is easily possible for two geodesics to diverge and converge later. Geodesics, of course, have identically zero 4-acceleration.

Bottom line: one must be more careful in using terminology. Tucker must mean some sort of coordinate accelerations, without warning the reader (perhaps that's what he means by "relative +/- accelerations", a peculiar phrase indeed).

Suppose two observer's "A" and "B" diverge from relative rest from P0 at which point they synchronized their watches, and in the future diverge and come to rest together at P1, to find their watches differ in elapsed time.

OK. This is not two geodesic paths, but it is a perfectly reasonable scenario -- they must accelerate apart and then decelerate together (with the acceleration/deceleration split arbitrarily between them).

## Re: Proper quantities in SR

The spacetime interval between P0 and P1  
is invariant and equal for all frames.

This is plain and simply not true. The "spacetime interval" between a pair of points is PATH DEPENDENT. The above scenario clearly shows that. <shrug>

Why is this? — because one must INTEGRATE the interval, and that requires a PATH. In general, different paths have different integrated intervals. Note that for timelike objects like thi