

Speed and..... Disintegration

So let's say you are standing on the equator.

The earth is rotating as usual, once every 24 hours, give or take, and since it has a circumference of about 25,000 miles, give or take, by simply standing still on your spot at the equator you are moving at about 1000 miles per hour, give or take.

That's pretty fast, eh?

But wait! There's more!

We have already established that you are moving about 1000 miles per hour simply by standing on the equator while the earth goes about its daily rotation. But at that same time, the earth is revolving around the sun, which it does once a year. While the earth's path around the sun is elliptical and not completely constant, for my purposes here-in allow me to establish my next approximations by positing a perfectly circular revolution. At an average distance of 93,000,000 miles from the sun, this gives one entire revolution a path of, give or take, 585,000,000 miles, based upon $C = 2\pi r$. If you divide that by the number of hours in a year ($365 \times 24 = 8760$), you are travelling about 66,000 miles per hour by revolution while at the same time moving along at 1000 miles per hour by rotation. These numbers are mind-boggling, and could use some refinement for full accuracy, or at least as accurate as our humanity allows us to know it with current sciences and mathematics.

But it's no wonder you get dizzy every now and again!!

And just extrapolate those numbers into the distances you travel in a lifetime, never mind an hour!

Just as further food for thought, we are told by the Hawkings of the world that our entire solar system revolves in something called a galaxy, and that galaxies also revolve around some quasi-central point, and that that point, belying its definition, revolves around something as well, and so on and on, ad infinitum --- well, you get my drift. We are moving at an incomprehensible, breakneck speed without even sensing it.

And, bear in mind, all of it without packing a suitcase, needing a passport, or ever having to leave home!!

And you now have a perfect response for anyone who may think that you are not moving fast enough!! Specious argument, I know, but it usually gets a good conversation going at cocktail parties.

Now let's go to the north pole.

Let's say you are standing precisely on it. The earth rotates as usual, but the point upon which you are standing moves virtually not at all except for one complete turn in 24 hours. So you are hardly moving at all. In fact, if physics works the way it is supposed to, there is a spot somewhere underneath your feet at the north pole that, at least theoretically, is not moving at all, by rotation!

Imagine that!

So what happens if you have a straight line of people, say holding hands, all the way from the equator to the north pole? Each of them travels, in one rotation of the earth, at different rate, ranging from 1000 miles an hour at the equator to practically nothing at all at the pole. But they do not have to let go of each other's hands despite the difference in their rates of speed, i.e., they are not forced to come apart, i.e., the integrity of the line is not compromised.

Apply that concept to any spinning object, say a disk. Different parts of that object are travelling at different rates of speed, dictated by their proximity to the axis about which they rotate, and yet, in most cases, their integrity remains uncompromised.

But not always.

If you spin something fast enough, it can and will disintegrate to at least some degree. To wit, a line of children holding hands to play "crack the whip", or how, in fact, salad spinners and cream separators get to do their jobs.

This, I believe, is the central concept behind how cyclotrons work, isn't it?

Except that they rotate in the realm of such high speeds that particles begin to toss their electrons --- overcoming their magnetic attraction to each other. But, isn't this what lies at the root of the disintegration?

If you take that analogy as reasonable, and you consider how unknowably fast things must be moving at the edges of the universe, even if the universe does indeed have edges, which infinity, per my understanding of its definition, tends to preclude, is the universe disintegrating there?

This begs the question: At what point, more precisely, at what rate of rotation, does the disintegration begin, and is it a process or an event? If it is a process, then can I assume that disintegration begins at even the slowest rate of rotation? If it is an event, at what point in the rotational speed-increase does it occur?

And most importantly, what niche do we, as humans, occupy in this disintegrative state of affairs?

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