Physics discussion 1

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Part 1

Physics has been a major interest of mine this year. After learning physics in college and doing self-research on certain subjects, I realized that physics is just one big mind game.

Once you figure it out, it changes your perspective of reality, especially when it comes to things that are taught to us in elementary, middle, and high school. I learned that what they teach is just a super simplified version of what it actually is, all just to avoid confusion so that the majority can agree on something.

However, what we all agree on that is “true” or a “fact” isn’t actually always “true” or a “fact.” That realization is what made me and others so addicted to learning conceptual physics.

Examples:

Geometry: What we learned in school is called Euclidean geometry, which is based on axioms (assumptions that are just taken to be self-evidently true). What I’ve been learning from Einstein’s book, Relativity: The Special and the General Theory, is that pure geometry isn’t just about lines and points, and that the idea of "one straight line going through two points" isn’t some absolute truth, it’s just an assumption we all agree on for simplicity.

Einstein basically says geometry is about what works in a given situation, not some fixed universal truth. That’s why the geometry we learned in school doesn’t apply when it comes to things like space-time and the speed of light.

So instead of thinking of geometry as just “math about shapes and angles,” we should actually treat it as a part of physics. Even at UCF, Physics 1 and 2 are taught with calculus and analytic geometry, which shows that geometry plays a real role in describing how the universe works.

What we learned in school is just a simplified version, not the whole story of what geometry really is.

The book goes deeper into this in Part II and I'm not fully confident on the concept yet, but the same idea applies to gravity. Gravity is usually taught as a "pull" or a "force." But in reality, gravity isn't a force at all. Einstein explains that mass curves space-time, and that's what causes the 'effect' we call gravity. That means even gravity is tied to geometry and what we learned about gravity isn't actually the truth, which is crazy to think about.

Obviously, this kind of information doesn't affect your everyday life and isn't really important to know unless you're working in this field, but it's still something worth thinking about. Not everything taught in public school is factual.

Part 2

Lately, I've been really into informational books. I've always liked literature and fiction, but now I'm reading more about things I actually care about, like physics and engineering. As I go through college and think about what I want to do for a living, it's wild realizing I'm learning things most people never think about. I don't say that to sound arrogant, it's just that I've been lucky. I was raised around ambitious, smart people, and I have parents who truly care about my education. Because of that, I am able to pursue a degree that's objectively hard and still be passionate about it. I've been reading Einstein's work lately, and what I learn in school makes me want to dive deeper. I find it fascinating. That said, I want to talk about something that's always on my mind.

SPACE IS A FABRIC. IT'S NOT EMPTY.

Mr. Einstein over here describes space as something that **bends and curves**, and mass, like the Sun, is what causes that bending. Planets aren't just floating or being pulled in; they move along the **curved space-time fabric** at the perfect speed and angle. It's all pure geometry. What's wild to me is that he figured this out with just math and thought. Bro casually be dropping some heat because why not. Meanwhile, after lecture, I go home more confused than I was before it. I have

to use Google or something to help me fully understand. YouTube is a big one for me. Sometimes, I use ChatGPT to work out some problems. Not reliable though.

Aerospace Engineering is difficult :(

Every day, Tiffany and I are working through physics and calculus, nonstop equations and real-world problems. But it's not just like plug in the formula and boom, here's the answer. It takes **critical thinking**, and knowing when to change/move around the equations/formulas depending on the context. It's honestly exhausting sometimes. I even get headaches from how intense it is, but it's all part of it. Since aerospace engineering combines physics and astrophysics, theories like Einstein's are actually super relevant, especially when it comes to things like **orbital mechanics and trajectory planning**. What he figured out 100+ years ago is still used in space travel today. That's wild bro. I also hate Newton for creating Calculus because wtf.

Why am I posting this?

Because I think about this stuff all the time, it's interesting. It makes you question things, and it's good to question everything. I talk about it a lot with Tiffany. She overthinks everything, and I love that; she questions things and always wants answers. When she works in the engineering industry, I'd trust her work more than anyone's. Typing this out helps me get it out of my head. It's like a little diary I can look back on. Physics is hard. Engineering is hard. But what makes it all worth it is understanding things most people never will.