

Special Relativity

Physics

Two postulates, and everything that follows from them.

Physics is identical in every inertial frame, and light travels at c regardless of the observer's motion.

$$\gamma = 1/\sqrt{1 - v^2/c^2}$$

$$v = 0.1c$$

Barely any effect.

$$\gamma \approx 1.005$$

$$v = 0.87c$$

Effects double.

$$\gamma = 2$$

$$v \rightarrow c$$

Unreachable for mass.

$$\gamma \rightarrow \infty$$

THE COMMON MISTAKE

✗ Adding velocities the everyday way

✓ Using the relativistic addition formula

0.8c plus 0.8c is 0.98c, not 1.6c. Nothing with mass ever reaches c in any frame.

The postulates are simple. Every counter-intuitive consequence is forced by keeping c constant for everyone.