

PHYS 2303 Homework 11

Fletcher Gornick

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Chapter 5 Problem 48

When a missile is shot from one spaceship toward another, it leaves the first at $0.950c$ and approaches the other at $0.750c$. What is the relative velocity of the two ships?

Chapter 5 Problem 103

- (a) Show that $(pc)^2/(mc^2)^2 = \gamma^2 - 1$. This means that at large velocities $pc \gg mc^2$.
- (b) Is $E \approx pc$ when $\gamma = 30.0$, as for the astronaut discussed in the twin paradox?

Chapter 5 Problem 114

Show that $E^2 - p^2c^2$ for a particle is invariant under Lorentz transformations.