

15.22: Momentum

The linear momentum \mathbf{p} of a body, referred to a frame Σ , is defined as

$$\mathbf{p} = m\mathbf{u}. \quad (15.22.1)$$

Here m and \mathbf{u} are its mass and velocity referred to Σ . Note that m is not the rest mass.

✓ Example 15.22.1

The rest mass of a proton is 1.67×10^{-27} kg. What is its momentum referred to a frame in which it is moving at 99% of the speed of light?

Answer = 3.51×10^{-18} kg m s⁻¹.

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