

Practice Quiz PS303 Modern Physics
February 5, 2015

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Name

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1. A certain particle has a proper lifetime of 1.00×10^{-8} s. It is moving through the laboratory at a speed of $0.85c$. What distance does the particle travel in the laboratory?
- (a) 2.55 m (b) 4.84 m (c) 1.34 m (d) 9.19 m

5 points

2. A particle of mass M at rest decays into two identical particles each of mass $m = 0.100M$ that travel in opposite directions. What is the speed of these particles?
- (a) $0.98c$ (b) $0.96c$ (c) $0.50c$ (d) $0.32c$

5 points

3. Tom observes a blinking light bulb that is at rest in his reference frame. Mary is moving relative to Tom at a speed of $0.735c$. According to Mary, the light blinks on for a time interval of 5.25 ms. What is the blinking interval according to Tom?
- (a) 7.74 ms (b) 1.48 ms (c) 3.56 ms (d) 10.76 ms
- (e) 5.25 ms