2022 Ph H1 Q11

Section: Particles and Waves

Topic: The Standard Model

Brief summary of the question

The mass of a Higgs boson is about 130 GeV/c^2. Which of the following is closest to the number of times more massive the Higgs boson is than a proton?

Worked solution

– Mass of Higgs boson ≈ 130 GeV/c^2.

– Mass of proton ≈ 1 GeV/c^2.

– Ratio = 130 / 1 = 130.

– So the Higgs boson is about 130 times more massive than the proton.

Final answer

C — 130.

Revision tips

Remember typical particle masses: proton ~1 GeV/c^2, electron ~0.0005 GeV/c^2.
Higgs boson is much heavier than both.