

2022 Ph H1 Q13

Section: Particles and Waves

Topic: Nuclear Reactions

Question Summary

Decay series: $X \rightarrow \alpha \rightarrow Y \rightarrow \beta^- \rightarrow {}^{214}_{83}\text{Bi}$. Identify nucleus X.

Worked Solution

From β^- : $Y = {}^{214}_{82}\text{Pb}$ (A same, $Z + 1$).

Working back through α : $X = {}^{218}_{84}\text{Po}$.

Final Answer

C — ${}^{218}_{84}\text{Po}$

Revision Tips

- β^- : A constant, $Z + 1$.
- α : $A - 4$, $Z - 2$.
- Work backwards if needed, checking A and Z.