

NCERT/CBSE PHYSICS CLASS 11 textbook

<http://www.TutorBreeze.com>

Answers to NCERT/CBSE PHYSICS Class 11(Class XI)textbook

CHAPTER FIVE Laws of Motion

EXERCISES

(For simplicity in numerical calculations, take $g = 10 \text{ m s}^{-2}$)

5.17 A nucleus is at rest in the laboratory frame of reference. Show that if it disintegrates into two smaller nuclei the products must move in opposite directions.

5.17

Solution:

Let mass of nucleus at rest be m and after split mass of nuclei produced are m_1 and m_2 .

Also,

Initial velocity of nucleus, $\vec{u}=0$

Let Velocity of m_1 be \vec{v}_1 and that of m_2 be \vec{v}_2 .

Conserving linear momentum,

$$m(0) = m_1 \vec{v}_1 + m_2 \vec{v}_2$$

$$\Rightarrow \vec{v}_2 = -\frac{m_1}{m_2} \vec{v}_1$$

The negative sign clearly implies that velocity of two nuclei produced are in opposite direction.

Please do not copy the answer given here

[Write to us for help](#)