

PP/317

29.

$$m_u = 3.95 \times 10^{-25} \text{ kg}$$

$$m_a = 6.64 \times 10^{-27} \text{ kg}$$

$$M_{u-a} = 3.8836 \times 10^{-25} \text{ kg}$$

	BEFORE	AFTER	
	u	u-a	a
m	$3.95 \times 10^{-25} \text{ kg}$	$3.8836 \times 10^{-25} \text{ kg}$	$6.64 \times 10^{-27} \text{ kg}$
v	0	V	$1.42 \times 10^4 \text{ m/s}$
p	0	$(3.8836 \times 10^{-25})v$	$9.4288 \times 10^{-23} \text{ kg}\cdot\text{m/s}$
	$\vec{p}_{\text{total}}$	$\vec{p}'_{\text{total}}$	

$$\vec{p}_{\text{total}} = \vec{p}'_{\text{total}}$$

$$0 = (3.8836 \times 10^{-25} \text{ kg})v + 9.4288 \times 10^{-23} \text{ kg}\cdot\text{m/s}$$

$$-9.4288 \times 10^{-23} \text{ kg}\cdot\text{m/s} = (3.8836 \times 10^{-25} \text{ kg})v$$

$$v = -243 \text{ m/s}$$

$\vec{v} = 243 \text{ m/s}$  [opposite the motion of the alpha particle]

