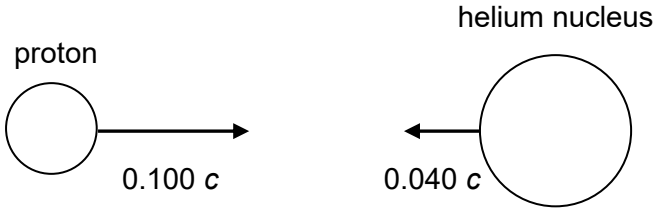
3 A proton (mass 1 *u*) travelling with velocity +0.100 *c* collides elastically head-on with a helium nucleus (mass 4 *u*) travelling with velocity −0.040 *c*.



What are the velocities of each particle after the collision?

	proton	helium nucleus
A	+0.004 *c*	+0.064 *c*
B	−0.004 *c*	+0.064 *c*
C	+0.124 *c*	+0.016 *c*
D	−0.124 *c*	+0.016 *c*

4 An ice cube of density ρ_1 made by freezing pure water of density ρ_2 is floating in a