Case 1) 8 amu, 145 km/s, -1e coulombs, 110 mT

8 amu = 8 protons to kg $8(1.672 \times 10^{-27})$

= 1.3376×10^{-26}

145 km/s = 1.95×10^5 -1e = -electron = -1.6×10^{-19} coul.

110 milliTeslas ⟶ .110 Tesla

$$R_{calculation} = \frac{MV}{qB} = \frac{(1.337 \times 10^{-26} \cdot 1.95 \times 10^5)}{(-1.67 \times 10^{-19} \cdot .110)} = -1.419 \times 10^{-1} m$$

= 14.19 cm.

Case 2: 4 amu, 90 km/s. +2e, 70 mT

4 amu → kg = $4(1.672 \times 10^{-27}) = 6.688 \times 10^{-27}$

90 km/s → m/s = 9.0×10^4

2e = $2 \cdot (1.6 \times 10^{-19}) = 3.2 \times 10^{-19}$ 70 mT = .07T

$$R = \frac{(6.688 \times 10^{-27} \cdot 9.6 \times 10^4)}{(3.2 \times 10^{-19} \cdot .07)} = 2.687 \times 10^{-2}$$

= 2.607 cm.

$$W_{calculation} = \frac{q}{M} B = \frac{3.2 \times 10^{-19}}{6.688 \times 10^{-27}} \cdot .070 = 3.344 \times 10^6$$

Case 3: 3 amu 120 km/s -1e Coulombs, 30 mT

$3 amu (1.672 \times 10^{-27}) = 5.016 \times 10^{-27}$ 30 mT → .03T

120 km/s = 1.20×10^5 -1e = -1.6×10^{-19} coulombs

$$R = \frac{(5.016 \times 10^{-27} \cdot 1.20 \times 10^5)}{(-1.6 \times 10^{-19} \cdot .03)} = .1254 m$$

$$W = \frac{-1.6 \times 10^{-19} \cdot .03}{5.016 \times 10^{-27}} = -9.56 \times 10^9$$