Errata for Matter & Interactions I: Modern Mechanics

P. 105: Last equation should be $\frac{T}{2} = 0.056\ \mathrm{s}$

P. 106: Last equation should be $\omega^2 \geq \frac{g}{\mu R}$

P. 154-155: Throughout the calculations, the carbon nucleus charge should be +6*e*, not +8*e*. This affects many of the results.

P. 286: Last equation should be $E + M_d c^2 = \sqrt{(p_p c)^2 + (M_p c^2)^2} + \sqrt{(p_n c)^2 + (M_n c^2)^2}$

P. 327: Missing moments of inertia:

Uniform thin rod of length *L* about axis perpendicular to rod, through center of rod: $I = \frac{1}{12}ML^2$

Uniform solid cylinder of length *L*, radius *R*, about axis perpendicular to cylinder, through center of cylinder: $I = \frac{1}{12}ML^2 + \frac{1}{4}MR^2$

P. 339, answer to Ex. 9.25 (which is on p. 316): 8.33 N

P. 359 and P. 375: It would be clearer to say $C = \Delta E/\Delta T$, omitting the *N*, and adding the comment that heat capacity can be on a per-atom basis, or a per-gram basis, etc.

P. 376, first equation: The value of h was incorrectly used for $\hbar$. Also, it would be appropriate to use $k_s = 4(5\ \mathrm{N/m})$. Making these corrections, the temperatures are 62 K, 59 K, 67 K; heat capacity $3.3\times10^{-23}\ \mathrm{J/K}$.

Improvements to problem statements

Problem 4.16, p. 161 (Nuclear fusion): It makes more sense to do part (b) first, then part (a).

Problem 5.10, p. 205 (Bungee jumping): In parts (e), (f), and (g), give numerical results for your design.

Problem 6.1, p. 227 (Determining energy levels): Part (b) Explain how to use an absorption measurement to distinguish between the two proposed schemes.

Problem 7.1, p. 254 (Jumping straight up—experiment): Part (c) Use your height measurements and physics principles to determine approximately the amount of time during the jump when your feet are in contact with the floor.

Problem 9.8, p. 331 (An asteroid collision): Diagram incorrectly shows an impact parameter so large that the asteroids won't collide!

Problem 10.8, p. 379 (Experiment: measurement of the heat capacity of water): The information printed on a microwave may give the current in amperes (A) rather than the power. The power can be calculated by multiplying the current rating times the voltage. If the rating is 6 A, and the voltage is 120 V, the power is (6 A)(120 V) = 720 watts.