

# Errors and Clarifications for Serway / Faughn

## College Physics 6<sup>th</sup> Edition

Fig 15.22 very confusing to have the size of the mg vector change when physically it doesn't change. Also a bit odd to have the mg and D' vectors separated; both act on the body, not on some strings

Ch 18 p 568 below eq 18.8  $1/e = .368$ , not .632

Fig 18.20 the contact points should be in contact with the bimetallic strip in this configuration

Table 23.1, Image location sign convention is wrong *IN VOLUME 2 EDITION P. 720*

Ch 24.1: conditions for interference claims wavelengths must be identical. Rather, they must be integer multiples of each other, or nearly so.

Eq 25.2 and discussion of angular magnification; also in summary: The text's definition is too limited: should not be restricted to object at the near point. Further, should refer to small objects (so the physical object height cancels in 25.2). Angular magnification is not the relevant variable for an object already huge, as it grows from an angular size of 150 degrees to 179 degrees after some optics. Rather, it's about magnification of details, even for a big object.

Fig 25.6 Confusing that the same object is given a different height in 25.6 a) and b)

Ch 26.9 p 826  $1u$  is given *incorrectly* as  $939.494 = \text{MeV}/c^2$ . The correct value is then used in the calculation 2 lines later.

Ch 27.4 p 847  $1\text{Angstrom}$  is used as a unit where rest of discussion in nm. Defined back in 21.12 as  $1\text{Angstrom} = .1\text{nm}$

Ch27.7 p852 wavelength for e's in an electron microscope is way too long: The text suggests  $.01 *$  visible wavelength, which is 4-5 nm. But  $\lambda = hc/\sqrt{2 m c^2 * KE}$  for  $KE = 54 \text{ eV}$  it's already  $.17 \text{ nm}$ , x 20 smaller. A typical electron microscope energy is  $> 50 \text{ keV}$ , so shorter still by another factor 30. The text confuses resolution with wavelength, but e microscope isn't limited by Rayleigh criterion. Instead, it's lens quality that limits electron microscope resolution. Reference: <http://www.biologic.uni-hamburg.de/b-online/e03/03e.htm> for example

Ch 28 Eq 28.2 appears to give not Rhydrogen (measured), but  $R_{\infty}$  (calculated), in eq 28.16 for an infinitely heavy nucleus, ignoring corrections due to  $m_e/m_{\text{proton}}$