Medical Imaging Signals and Systems (2e)

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Errata, Version 2.11, December 21, 2016

This errata applies to the first printing of the second edition. The first printing can identified by looking on the copyright page (on the back of the title page) and finding the following text:

10 9 8 7 6 5 4 3 2 1

The last number of the sequence 10 9, . . . , 1 is the printing — in this case, 1, the first printing. These corrections may also apply to later printings of the second edition.

In the bulleted items below, entries starting with an asterisk are errors that should be corrected. Entries without an asterisk are either typographical corrections or corrections related to clarity.

Part I: Basic Imaging Principles

Page 3: In the very first line of text the phrase "radio frequency waves" should be replaced by "radio frequency signals".

Page 49: Problem 2.7, part (a) should read

$$(a)\, g(x,y) = f(x,y) f(x - x_0, y - y_0)\,.$$

Chapter 5: Projection Radiography

* **Page 177:** In Problem 5.12, the second 1-D function listed in the problem description should have the subscript 2, not 1. In other words, the displayed equation should look like this:

$$h_1(x) = e^{-x^2/5} \quad h_2(x) = e^{-x^2/10}$$

Chapter 6: Computed Tomography

Page 229: The word "exits" in the first line of Problem 6.24(b) should be "exists" and it should have a period after it as in: exists.

Chapter 7: The Physics of Nuclear Medicine

* **Page 253:** In problem 7.8(a), the equation relating the decay factor DF to the half-life is missing a minus sign. The equation should look this:

$$\mathrm{DF} = e^{-0.693t/T_{1/2}}\,.$$

Chapter 8: Planar Scintigraphy

Page 272: In the 11th line of the paragraph below Equation (8.12) the word "second" should be replaced by the word "third". In other words, the line should read:

radioactive sources as they appear on the detector plane. The third factor is

Page 287: The word "Computer" in 8.10(d) should read "Compute".

Chapter 9: Emission Computed Tomography

* **Page 312:** Equation (9.22) is wrong. K should simply be defined as

$$K = \frac{\epsilon T A_h \tilde{A}_h}{4\pi R^2} \, .$$

In other words, the exponential term should not be included in the definition of K.

Page 312: The lines after Equation (9.23) should read:

then we see that when attenuation is ignored a PET scanner measures an approximation of the Radon tranform of the radiotracer activity concentration $f(x, y)$,

* **Page 317:** In equation (9.37), the term a_{ji} should be a_{ij}.

Chapter 10: The Physics of Ultrasound

* **Page 365:** In Problem 10.15, add the following sentence just before part (a): Let $\mu_a = 0.04$ cm^{-1} MHz^{-1} f (in MHz).

Chapter 12: Physics of Magnetic Resonance

* **Page 412:** In Table 12.1, the gyromagnetic ratio of ^{31}P is 17.25, not 11.26.

Page 432: In Figure 12.12, the top waveform should read "RF Excitation" instead of "RE Excitation"

* **Page 433:** There should be a minus sign in the exponent in Equation (12.43):

$$M_z(t) = M_0(1 - 2e^{-t/T1})$$

Chapter 13: Magnetic Resonance Imaging

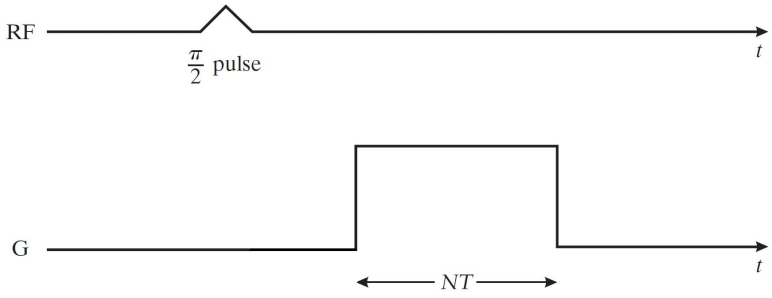
* **Page 475:** The last equation of Example 13.9 is wrong. It should read

$$\hat{T}_R = \frac{T_1^{\mathrm{b}} T_1^{\mathrm{f}}}{T_1^{\mathrm{b}} - T_1^{\mathrm{f}}} \ln\left(\frac{T_1^{\mathrm{b}}}{T_1^{\mathrm{f}}}\right) .$$

* **Page 493:** In the caption of Figure P13.8, it should say "See Problem 13.16", not 13.6.

* **Page 496:** In Problem 13.29 part (a), it should say "Can you think of a method to image the object?" The word "image" was left out by mistake.

* **Page 491:** Figure P13.5 should be replaced by the following figure:


RF
$\frac{\pi}{2}$ pulse
t
G
t
NT