

## Corrections to Chap 9

Bottom of page 256, change next to last paragraph plus Conclusion #1 as follows. Red indicates changed material. A clean copy in black, for cutting out and pasting, is provided at the bottom of this page.

In similar fashion, we can show that every term shown specifically in (9-3) is un-physical and contributes zero to the transition amplitude. (As another example, by doing Prob. 1, you can prove to yourself that four contraction terms in (9-3) are not physical.) However, some terms in  $S^{(3)}$ , such as

$$N\left\{\underbrace{(\bar{\psi}A\psi)_{x_1}}_{\square} \underbrace{(\bar{\psi}A\psi)_{x_2}}_{\square} \underbrace{(\bar{\psi}A\psi)_{x_3}}_{\square}\right\}, \quad (9-5)+1$$

not shown specifically in (9-3), lead to connected Feynman diagrams, are physical, and generally do not equal zero. Such terms do not play a role in anything we will do in this book.

Conclusion #1:  $S^{(3)}$ -Terms with only three external particles, only one external particle, or a disconnected vertex ~~plays no role~~ result in zero amplitude values in QED and can be ignored.

*Most Similarly,  
~~all~~-terms in  $S^{(3)}$   
are non-physical and  
can be ignored.*

Top of page 257, first paragraph. Delete second sentence.

Page 257, next to last paragraph, last two lines: Change “3<sup>rd</sup> order terms are all zero (as we showed earlier)” to –there are no 3<sup>rd</sup> order terms–.

Pg. 262, paragraph titled “Higher Order Terms”, 1<sup>st</sup> paragraph: After “that”, insert – for interactions with lowest order having two vertices, –

Delete the side note for this paragraph.

Pg. 264, Section 9.1.8:

First bullet, after “amplitude”, insert – for a lowest order interaction with two vertices –

Second bullet: After “all”, insert –such–.

Clean copy of changed material on page 256:

In similar fashion, we can show that every term shown specifically in (9-3) is un-physical and contributes zero to the transition amplitude. (As another example, by doing Prob. 1, you can prove to yourself that four contraction terms in (9-3) are not physical.) However, some terms in  $S^{(3)}$ , such as

$$N\left\{\underbrace{(\bar{\psi}A\psi)_{x_1}}_{\square} \underbrace{(\bar{\psi}A\psi)_{x_2}}_{\square} \underbrace{(\bar{\psi}A\psi)_{x_3}}_{\square}\right\}, \quad (9-5)+1$$

not shown specifically in (9-3), lead to connected Feynman diagrams, are physical, and generally do not equal zero. Such terms do not play a role in anything we will do in this book.

Conclusion #1: Terms with only three external particles, only one external particle, or a disconnected vertex result in zero amplitude values in QED and can be ignored.

*Most terms in  $S^{(3)}$  are non-physical and can be ignored.*