Problem set 1

Due Jan. 31, 2013

1. Do a literature search to find how the “$V - A$” structure of the weak interaction was determined.

(a) Summarize what searches you did to find this information.

(b) Indicate where the critical information is to be found in the research literature. E.g., state where a graph is to be found showing how to distinguish the $V - A$ structure from other cases.

2. What would happen if, in the Weinberg-Salam theory, the doublet Higgs field were replaced by a triplet ($I = 1$) of real scalar fields? For example, what would the masses of the gauge bosons be? Try to determine whether or not this is a viable choice of multiplet?