

Homework n.2

Let's consider the article:

J.H. Christenson et al. "Evidence for the 2π decay of the K^0_2 meson" Phys. Rev. Lett. 13 (1964) 138

From the information that can be gathered from the text and plots of Figs. 2 and 3 evaluate the following quantities and answer the questions:

1. Total number of events collected
2. Number of signal events after final selection
3. The significance of the observed signal
4. Number of background events after final selection (make a simple extrapolation to evaluate it, e.g. define a signal region and extrapolate the background from sidebands)
5. The purity of the sample after final selection
6. The number of background events observed in the experiment before the final selection.
7. The total background rejection factor.
8. The total number of decays to be considered as normalization for the Branching Ratio R evaluation.
9. Did the authors make an absolute or a relative measurement?
10. Spot the typo in the formula for the evaluation of the CP violation parameter $|\epsilon|$ (the numerical value of $|\epsilon|$ is correct).
11. What are the approximations for R in this formula?