

# BRA - Beta Ray Spectroscopy

## Signature Sheet

Student's Name \_\_\_\_\_ Partner's Name \_\_\_\_\_

### Pre-Lab Discussion Questions

It is your responsibility to discuss this lab with an instructor before your first day of your scheduled lab period. This signed sheet must be included as the first page of your report. Without it you will lose grade points. You should be prepared to discuss at least the following before you come to lab:

**Watch the Beta Ray & Error Analysis video with these questions at hand.**

1. What are Beta Rays? How are they produced?
2. How is radioactive decay related to nuclear binding energy?
3. What is the half-life of Cs137 and what are the decay modes of this nucleus? Sketch the two beta-decay distributions of Cs137. Qualitatively explain their general shapes and relative sizes. Indicate the maximum energy of each distribution.
4. What is the "internal conversion process" and how does atomic electronic binding play a role in the electron's final kinetic energy?
5. What is a Fermi-Kurie plot, and why do you need to use it?
6. What does the Beta-ray spectrometer measure, and how does it measure it?
7. Identify and describe the operation of each of the pieces of experimental apparatus: source, coils, preamp, amp, SCA, etc.

Staff Signature \_\_\_\_\_ Date \_\_\_\_\_

Completed before the first day of lab? (Circle one) Yes / No

### Mid-Lab Discussion Questions

1. On day 2 of this lab, you should have taken several quick spectra and determined an appropriate setting of the discriminators baseline parameter. Demonstrate and show the spectra to an instructor and ask for a signature.

Staff Signature \_\_\_\_\_ Date \_\_\_\_\_

Completed by day 2 of lab? (Circle one) Yes / No

**Checkpoint Signatures**

1. LabView

Staff Signature \_\_\_\_\_

2. Scope Image

Staff Signature \_\_\_\_\_

3. Statistical Fluctuations

Staff Signature \_\_\_\_\_

4. Hysteresis

Staff Signature \_\_\_\_\_

5. Combined Fermi-Kurie Plot

Staff Signature \_\_\_\_\_