

STATUS OF THE RECOIL MASS SPECTROMETER

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The Recoil Mass Spectrometer (RMS) has been the workhorse of nuclear structure research these past two years. With the refinements made to the Double-sided Silicon Strip Detector (DSSD), Moving Tape Collector (MTC), Clover Ge Array (CLARION), and Ionization Chamber (IC) a complete experimental program to study nuclear structure has been established. To date, the following experimental techniques have been used:

- charged-particle radioactivity (DSSD) with
 - proton and alpha decay
 - short half-lives (microsecond)
 - beta-delayed protons
 - with X-ray identification
 - as veto
- beta radioactivity (MTC) with
 - pair spectroscopy
 - gamma-ray spectroscopy (with beta-veto counters)
- in-beam gamma-ray spectroscopy (CLARION) with
 - mass identification
 - Z identification (IC)
 - recoil decay tagging (CLARION+DSSD) technique
- isomer spectroscopy with Clover Ge

Many minor physical changes/additions have been made to the RMS. Collimator slits and an alpha source have been added to the focal plane chamber. A circular collimator has also been added to the achromat. A cryopump has replaced a turbopump between ED2 and Q6 to provide improved vacuum when using the IC. The old turbopump replaced a smaller one at the focal plane leaving us with one spare turbopump. The high voltage ceramic insulator on the cathode of E1 has been replaced after it developed an unrepairable vacuum leak probably caused by a corona induced discharge in the very early commissioning stages. It is believed that the conditions which caused the discharge have been fixed. Water hoses have been replaced on all power supplies following several leaks. One leak apparently resulted in a calibration change for D1 which has since been recalibrated.

References

- ¹ Oak Ridge Institute of Science and Education, Oak Ridge, TN.

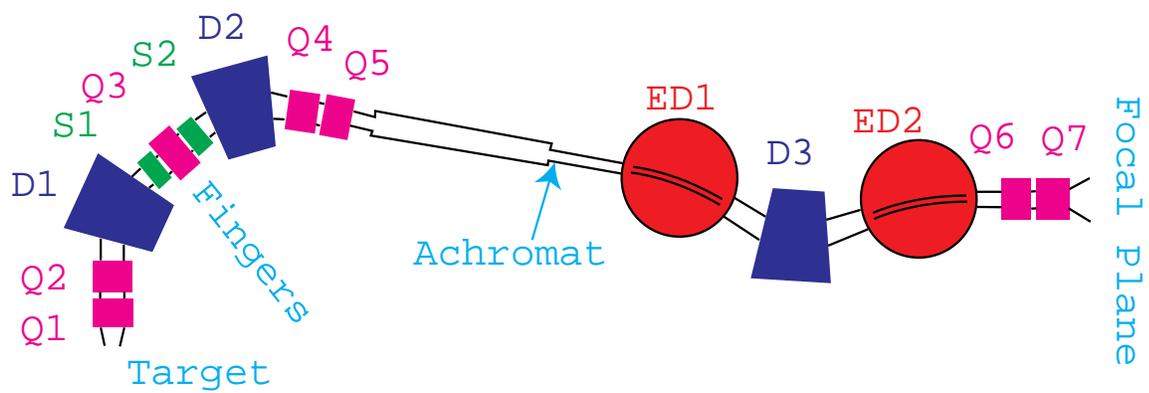


Figure 1: A schematic of the RMS. CLARION is located at the target position and the DSSD, MTC, and IC follow the RMS Position Sensitive Avanche Counter at the focal plane. A subset of Clarion may be used at the focal plane with the MTC and DSSD chambers.