



Proton Beam Line

The Cyclotron Institute's Radiation Effects Facility now offers a dedicated beam line for proton testing. Combining an H-minus ion source with the re-commissioned K150 cyclotron, we offer protons with tunable energies from 6.3 to 45 MeV. Additional energies can be provided as low as 2 MeV with our degrader system. Maximum flux for these beams is on the order of 1×10^{10} particles/cm²/s.

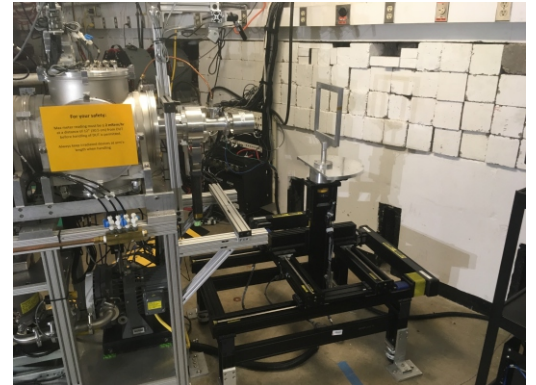
Dosimetry and Beam Quality



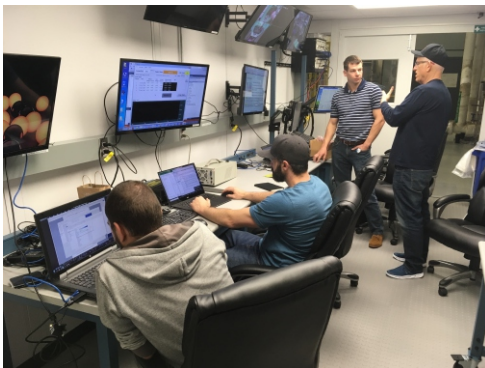
As with our heavy ion testing beam line, we provide diagnostic equipment for complete dosimetry analysis and beam quality assurance. Test control and monitoring are conducted with the same custom SEUSS software that is used for heavy ion testing. Dosimetry at low flux (1×10^7 particles/cm²/s and lower) is conducted using an array of five detectors comprised of plastic scintillators coupled to photomultiplier tubes. For higher fluxes, uniformity is first adjusted at a lower flux and then a set of four tantalum foils are used to back-scatter protons into four additional detectors. After a calibration measurement, dosimetry relies on these back-scattering measurements.

In-Air Testing

Testing is conducted in air. A thin aluminum window allows the beam to exit the beam line with minimal energy loss. A positioning system, identical to that used on our heavy ion beam line, is located at the exit of the beam line. A test frame and a platter are provided, also identical to those of our heavy ion testing beam line. Positioning in x,y,z and theta directions can be controlled remotely using our custom SEUSS software. A degrader system consisting of aluminum plates on a rotatable wheel is available and can be used to change beam energy without cyclotron re-tuning.



Proton Testing at Our Facility



The proton beam line is located in the K150 cyclotron vault. A dedicated data room is located directly above the vault. A BNC, CAT6, and serial patch panel are available for customer use. Additional cabling can be run through a cable conduit between the vault and the data room. We provide carts with 2" thick borated polyethylene on three sides to shield equipment during testing.

**For beam-time scheduling and for current rates please contact:
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Proton Testing at TAMU

Proton energies (tunable): 6.3-45 MeV

Proton energies with degraders: As low as 2 MeV

Available Fluxes: 10^2 to 10^{10} (particles/cm²/sec)

Uniformity: >90% over a 1.0", 1.5", or 1.75" diameter opening

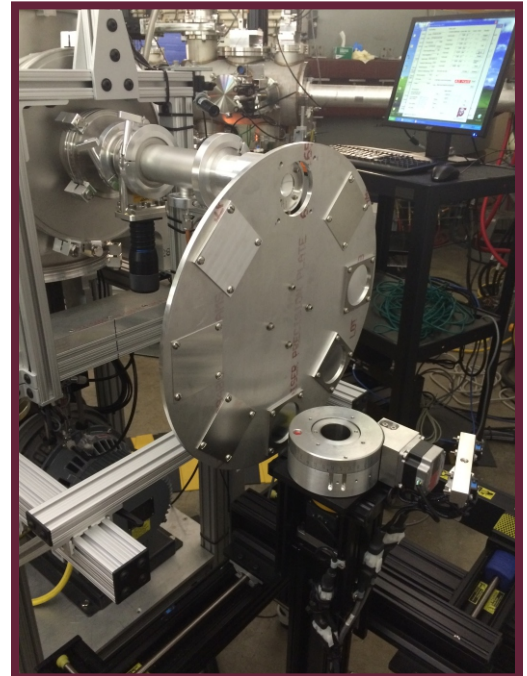
In-Air testing

Remote device positioning

Convenience of testing heavy ions and protons in the same visit



Equipment carts shielded with borated polyethylene.



Degrader wheel.