



# McLAREN PROTON IRRADIATION PROGRAM

AT McLAREN PROTON THERAPY CENTER

## Services/Deliverables

- Proton beam delivered per arrangement with user by varying:
  - Energy
  - Fluence
  - Irradiation area
  - Beam profile
  - Dynamically variable proton current
- Beam intensity profiles for each incident kinetic energy
- Run summary with incident spill, energy distribution, and fluence history for each irradiation run
- Physicists and engineers available to help optimize set up, irradiation plans, and data reporting for maximum efficiency

## Logistics

- Beam time available Saturdays and Sundays all day or weeknights from 10 pm to 4 am pre-arranged
- Equipment can be set up after clinical work Fridays or after clinical work weeknights
- On site lodging available the Hospitality House at McLaren Flint
- Bishop International Airport – 5 miles away



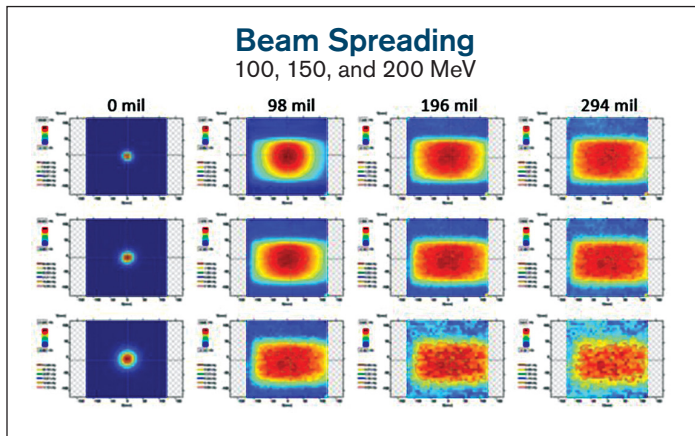
CONTROL ROOM AND BEAM MONITORING

## Irradiation Room

- No need for vacuum chamber
- Irradiation targets typically mounted 2 to 3 meters downstream on adjustable table or stage
- Gigabit Ethernet & 120V power available in irradiation room and experimenter area
- Upstream scattering and collimation available to cater to specific experiments



PYRAMID EQUIPMENT



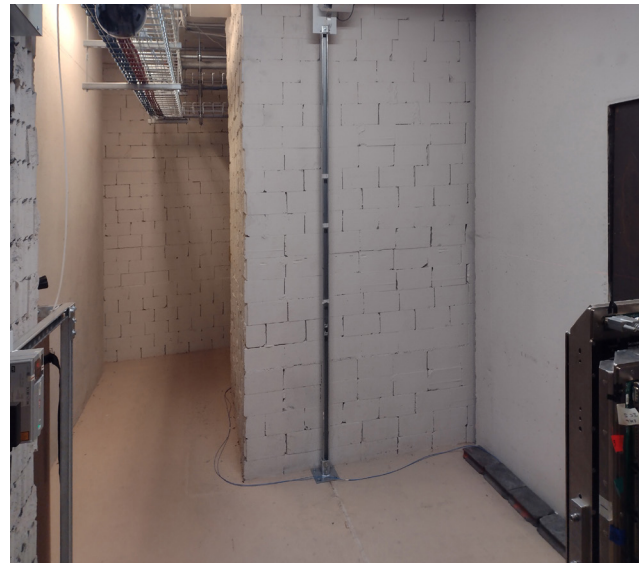
PROTON THERAPY CENTER

## Beam Specifications

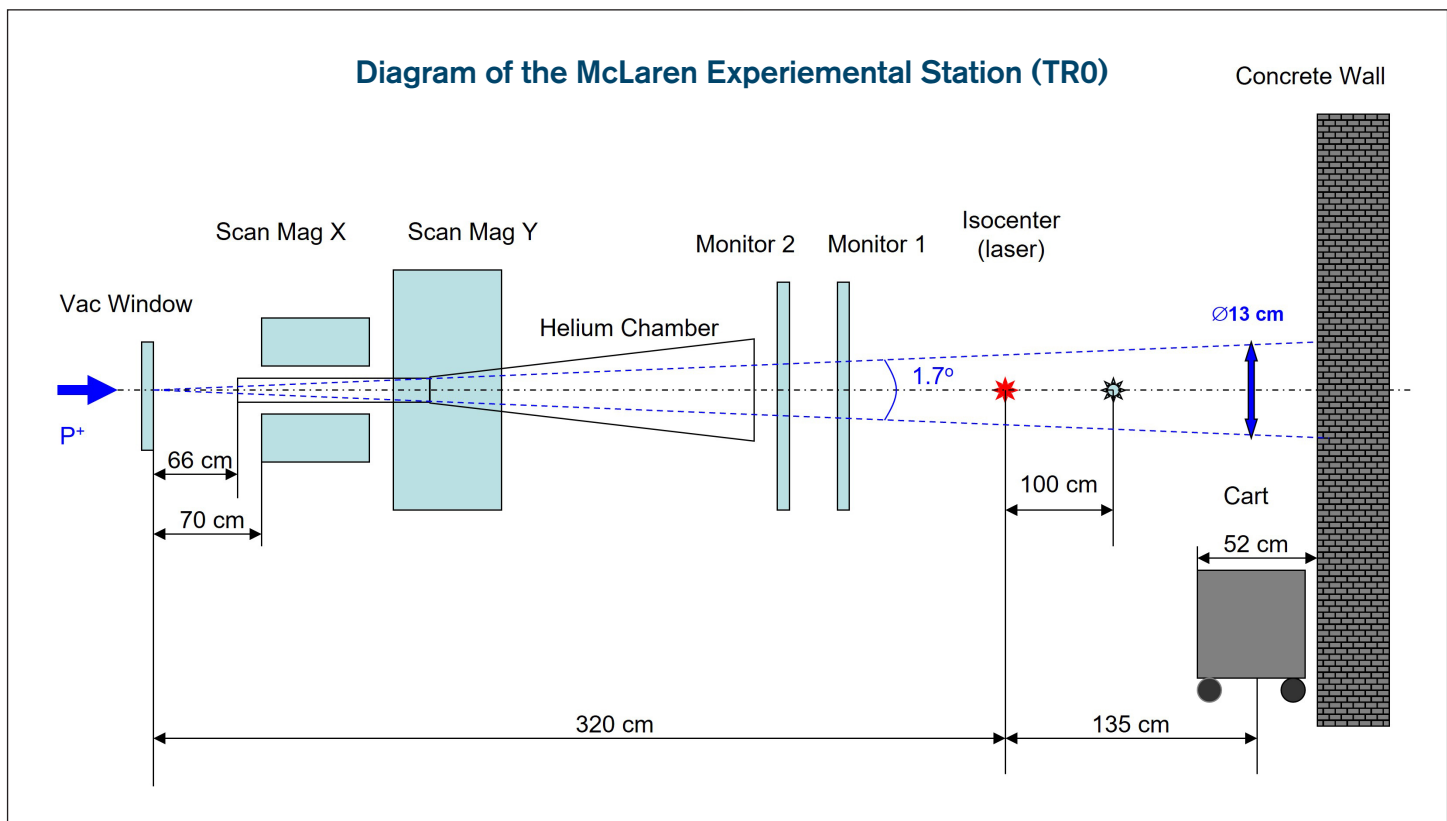
- Proton kinetic energy range from 70 MeV to 250 MeV
- Kinetic energy can be changed in seconds
- Protons issued by synchrotron with 2.4 second spill separation and variable proton current
- Total protons per spill ranges from 0.8 to 1.6 Gigaprotons
- Beam irradiation dimensions presently limited to ~10 cm × ~20 cm

## Beam Monitoring and Control

- Pre-irradiation calibrations and target positioning using sensitive x-y position and intensity detectors
- Beam spills real time monitored with calibrated ion chamber upstream from target position
- Spills started & stopped either manually or by preset



EXPERIMENT AREA



EXPERIMENT AREA DIAGRAM

Competitive pricing for prearranged and scheduled blocks with issuance of PO