

PROTON & NEUTRON IRRADIATION FACILITIES AT CERN-PS EAST HALL

www.cern.ch/irradiation
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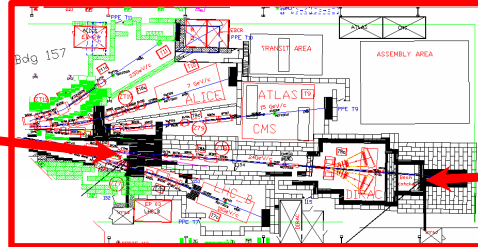
Remote controlled irradiation systems

IRRAD1, IRRAD2 : Fast irradiation, sample exchange without beam stop, improved radiation safety : no access to irradiation area needed.

IRRAD2 : Well defined spectrum dominated by neutrons, Radiation field similar to LHC experiments field.

IRRAD3, IRRAD5 : X,Y scanning over 10 x 10 cm² including irradiation at low Temperature (-15 °C).

Dosimetry : High precision with Aluminium, silicon dosimeters, RadFET, passive dosimeters, film Gafchromic, OSL.



CERN-PS East Hall

Proton Facilities

IRRAD-1

IRRAD-3

IRRAD-5

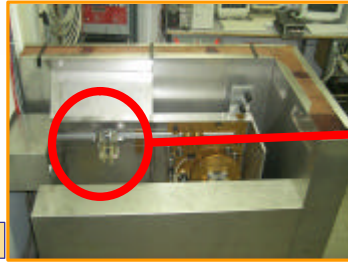
T7 Beam, Primary Zone
Proton 24 GeV/c
Spot = 2 x 2 cm²,
Flux = 1 to 5E13 p/cm²/h

Neutron Facility IRRAD-2

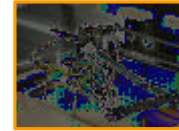
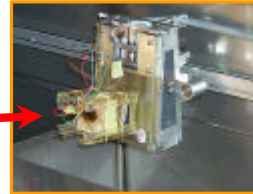
Neutron : 50 keV - 10 MeV
p, p+, p- : 0.3 - 4 GeV
Gamma : 100 keV - 100 MeV

Proton Facility IRRAD-1

Volume 5 x 5 x 20 cm³, 1Kg
X Scanning
Spot = 2 x 2 cm², 1 to 5E13 p/cm²/h

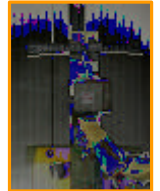
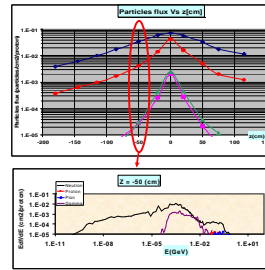


Load station



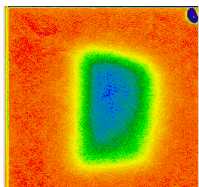
Neutron Facility IRRAD-2

Neutron flux ~ 4E11 n cm⁻² h⁻¹ (1 MeV_{eq})
Volume 20 x 20 x 20 cm³, 5Kg



Proton Facility IRRAD-3

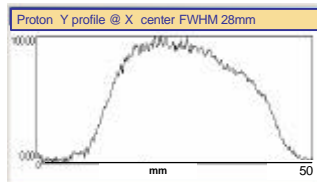
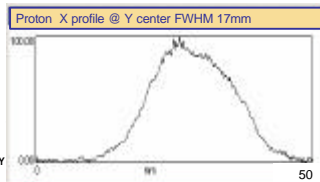
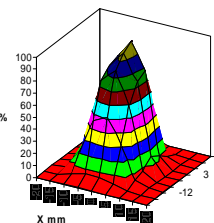
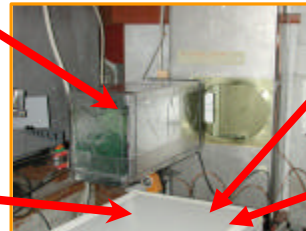
Volume 20 x 20 x 50 cm³, 100Kg
X, Y scanning
Low temperature -15°C



Proton Beam Profiling

Proton Facility IRRAD-5

Volume 20 x 20 x 50 cm³, 5Kg
X, Y scanning
Low temperature -15°C



15 Years experience on irradiation

Statistics 2003

- 1992 Hours of proton irradiation (83 Days)
- 2424 Hours of neutron irradiation (101 Days)
- 579 Sample SETs irradiated and traced
- 377 Dosimetry with Ge spectrometer
- 202 Dosimetry with NaI spectrometer
- 65 Users from 30 institutes
- 55 Expeditions all over the world (T ~ -5°C)
- 30 Dosimetry with Si detector
- 5 Different places for storage (Low T < -20°C)