Upgrade of the Light Ion Irradiation Facility (LIF) at Louvain-la-Neuve

Guy Berger

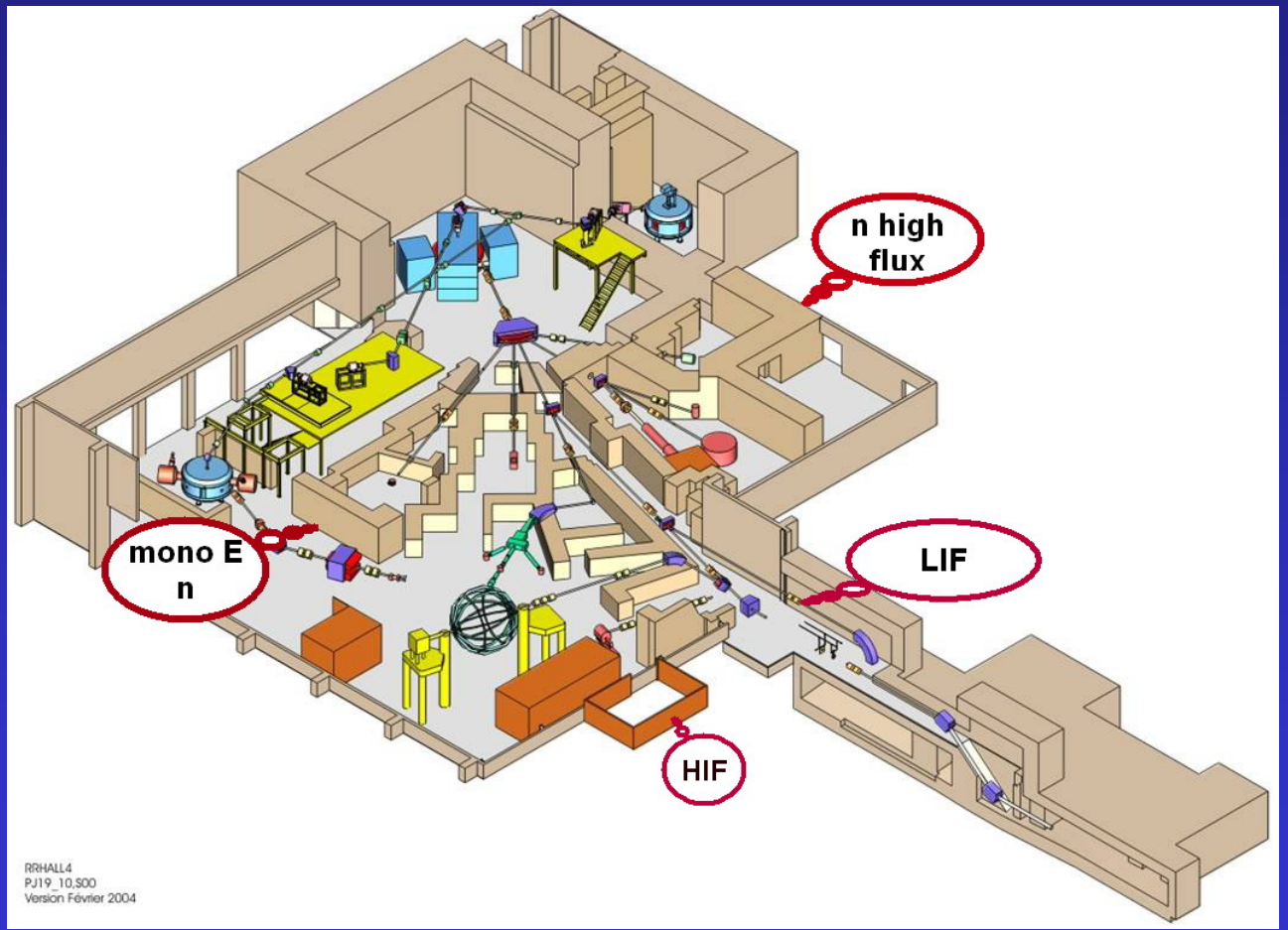
Université catholique de Louvain

Centre de Recherches du Cyclotron

Outline

- ✓ Introduction.
- ✓ Mechanical Upgrades.
- ✓ Detectors Upgrades.
- ✓ User Interface Upgrades.

LIF Localization



Beam Parameters

- ✓ Energy:
  - o CYCLONE primary energy 65 MeV
  - o DUT energy between 10 and 62 MeV
- ✓ Flux:

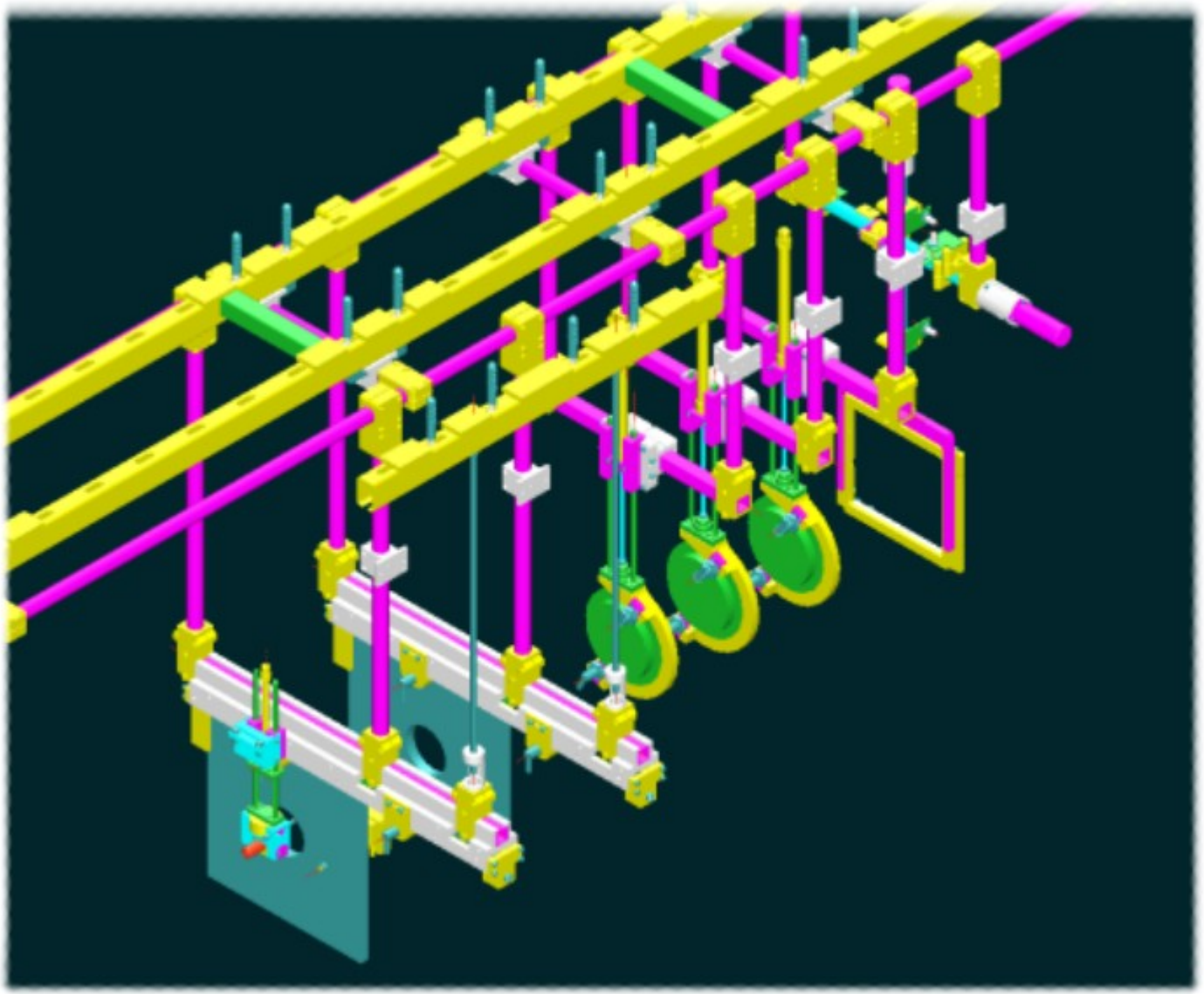
  Between a few 10 p/s cm² and 5E8 p/s cm²

LIF Mechanical Upgrades

- Diffusion foil
  250µm lead foil on a pneumatic jack
- Beam transport tube
  avoid the energy losses in and activation of the surrounding air
- Beam collimators
  between 10 and 80 mm in step of 10 mm in diameter
- Laser diode and camera.
- Water phantom (X-Y-Z)

LIF Mechanical Upgrades

- Energy degraders
  - 30 plastic slabs (10 different thicknesses, 3 of each)
  - Energies between 9.3 and 62 MeV available
- X-Y table
  - Similar to existing HIF one.
  - Clamp on plate



LIF Detector Upgrades

- large fluxes transmission chamber calibrated vs. a precision faraday cup

- low fluxes scintillators
  - 1 thin scintillator placed before the first collimator plate
  - 1thick scintillator placed at 0 ° for calibration purpose

LIF UI Upgrades

- FieldPoint PLC
- Motor controllers and A/D I/O cards from National Instruments

- LabVIEW environment

  - Beam data flux, reached fluence, dose, energy …
  - Beam line status.
  - Component positioning and selection.
  - Automatic procedures (detector calibration, beam profile …).