

Entry: **CU10**
 Machine Name: **CYCLONE30 - PROTO**
 Address: (UCL) 2, chemin du Cyclotron, B-1348 Louvain-la-Neuve (Belgium)
 In Charge of the cyclotron: **G. RYCKEWAERT**
 Tel: +32-10-47 32 37
 Fax: +32-10-45 21 83

Date: **June 1998**
 Institution: **Université catholique de Louvain**
 Web: <http://cyc.ucl.ac.be/CYC/>
 E-mail: Ryckewaert@cyc.ucl.ac.be

HISTORY
 Design by: **UCL for ION BEAM APPLICATIONS S.A.**
 Construction time: **1985 - 1986**
 First beam: **1986**

CHARACTERISTIC BEAMS
 ions / energy (MeV/n) / current (pps) / power (W) :
 - P. (H⁻): 30 ; 3.10¹⁵ ; 15000

transmission efficiency (total)
 - typical: 100 % - best: 100 %
 transverse emittance (rms)
 - vertical: π mmmrad
 - horizontal: π mmmrad
 longitudinal emittance (rms) $\Delta E/E$.deg RF

USES
 basic research: 50 % therapy: %
 development: % isotope production: 50 %
 other applications: % maintenance: %
 beam tuning: %
 total time: 2000 h/year

TECHNICAL DATA
 a) magnet
 type: compact - r.t. coils
 Kb: 30 MeV/A Kf: 30 MeV/A
 average field (min-max): 1.0 T
 number of magnet sectors: 4
 - angle: 54 - 58 deg
 - spiral (max): 0 deg
 pole parameters
 - diameter: 1.6 m
 - injection radius: m
 - extraction radius: 0,5 - 0,75 m
 hill gap: 0,03 m valley gap: 1.0 m
 field trimming
 - trim coils
 - number: -
 - current (max): A
 - harmonic coils
 - number: -
 - current (max): A
 - others
 - number: -
 - current (max): A
 main coils:
 - number: 1 pair
 - Ampere-turns: 66.000 A.T.
 - current: 110 A
 stored energy: MJ
 weight : - iron: 45 t - coils: 4 t
 power
 - main coils (total): 7 kW
 - trim coils (total max): kW
 - refrigerator (cryogenic): kW
 b) RF
 - acceleration
 - frequency range: 66 MHz
 - harmonic modes: 4
 - number of dees: 2
 - angular aperture: 30 deg
 - voltage:- average (min-max): 50 kV
 - variation with radius:
 - power in (max): 25 kW
 - stability: - phase: 1 deg - voltage: 0,1 %

- other cavities
 - purpose:
 - frequency range: MHz
 - region of influence: m
 - voltage (max): kV
 - power in (max): kW
 - stability:- phase: deg - voltage: %
 c) injection
 - internal source:
 - external (radial/axial): **MULTICUSP H⁻**
 - elements:
 - source voltage: 30 kV
 - injection energy: 0,030 MeV/n
 - buncher: double gap - sinusoidal
 - injection efficiency: 35 %
 d) ion sources/injector
 e) extraction
 - elements, characteristics:
 - stripping foil - 2 ports
 - efficiency 100 % - best: %
 f) vacuum
 - pumps: 2 oil diffusion pumps
 - 2 cryopumps
 - achieved vacuum: 5.10⁻⁸ Pa

REFERENCES
 Y. Jongen, J.-L. Bol, A. Chevalier, M. Lacroix,
 G. Ryckewaert, **CYCLOTRONS '86**, pp. 275-278

EXPERIMENTAL FACILITIES

PLAN VIEW OF FACILITY

