

**ENTRY NO:**C07**Date:** 03 Feb 2005 13:05:23**Machine Name:** K130 cyclotron**Institution:** University of Jyväskylä, Department of Physics(JYFL)**Address:** P.O. Box 35 FIN-40014 University of Jyväskylä Finland**Telephone:** +358-14-260 2400**Fax:** +358-14-260 2401**Web Address:** <http://www.phys.jyu.fi>**Person in Charge of Cyclotron:** Pauli Heikkinen**Person Reporting Information:** Pauli Heikkinen**E-mail Address:** pauli.heikkinen@phys.jyu.fi**History****Designed by:** Scanditronix AB, JYFL**Construction Dates:** 1988-1990, Negative ions: 2000**First Beam Date:** 1992**Characteristic Beams**

p (H-),	45 MeV,	6.2e14 pps
Ar,	5 MeV/u,	2.7e13 pps
Ni,	4.7 MeV/u,	2.8e12 pps
Kr,	9.4 MeV/u,	2.2e12 pps

**Transmission Efficiency (source to extracted beam)**

Typical (%): 5

Best (%): 15

**Emittance****Emittance Definition:** 90 %**Vertical (pi mm mrad):** < 10 pi mm mrad**Horizontal (pi mm mrad):** < 10 pi mm mrad**Longitudinal (dE/E[%] x RF[deg.]):****USES****Basic Research (%):** 78**Development (%):** 3**Therapy (%):** 0**Isotope Production (%):** 8**Other Application (%):** 8**Maintenance (%):** 2**Beam Tuning (%):** 1**Total Time (h/year):** 6500**TECHNICAL DATA****(a)Magnet****Type:** compact**Kb (MeV):** 130**Kf (MeV):** 90**Average Field (min./max. T):** 1.77 (1.3-2.1)**Number of Sectors:** 3**Hill Angular Width (deg.):** variable 51 - 58**Spiral (deg.):** 58**Pole Diameter (m):** 2.40**Injection Radius (m):** 0.0131 - 0.0188**Extraction Radius (m):** 0.94**Hill Gap (m):** 0.174**Valley Gap (m):** 0.330**Trim Coils****Number:** 15x2**Maximum Current (A-turns):** 900 - 3300**Harmonic Coils****Number:** 4xNsectorsx2**Maximum Current (A-turns):** 2400 - 3800**Main Coils****Number:** 1x2**Total Ampere Turns:** 400000**Maximum Current (A):** 1000**Stored Energy (MJ):****Total Iron Weight (tons):** 308**Total Coil Weight (tons):** 15**Power****Main Coils (total KW):** 130**Trim Coils (total, maximum, KW):** 22.5**Refrigerator (cryogenic, KW):****(b)RF****Acceleration****Frequency Range (MHz):** 10 - 21**Harmonic Modes:** 1, 2, 3**Number of Dees:** 2**Number of Cavities:****Dee Angular Width (deg.):** 78**Voltage****At Injection (peak to ground, KV):****At Extraction (peak to ground, KV):****Peak (peak to ground, KV):** 50**Line Power (max, KW):** 100**Phase Stability (deg.):****Voltage Stability (%):****(c)Injection****Ion Source:** Multicusp (negative), 6.4 GHz ECR, 14 GHz ECR**Source Bias Voltage (kV):** 0 - 20**External Injection:** axial**Buncher Type:** Single gap, 1st and 2nd harm**Injection Energy (MeV/n):****Component:****Injection Efficiency (%):** 30 - 70**Injector:****(d)Extraction****Elements, Characteristic:** electrostatic deflector (50 kV), electromagnetic channel (1250 A), passive channels (hor. + vert. focusing), stripper for negative ions**Typical Efficiency (%):** 70**Best Efficiency (%):** 90 (100 for stripper)**(e)Vacuum****Pumps:** 2 cryo pumps (5000 l/s)**Achieved Vacuum (Pa):** 5e-6**REFERENCES****EXPERIMENTAL FACILITIES**

Isotope separator on line IGISOL, gas filled recoil separator RITU, gamma detector arrays, high efficiency neutron detector system HENDES, 1.5 m diam. scattering chamber, chamber for radiation defects studies

**COMMENTS**