



CA9700934

1992 June Vol. 6 No. 6

TASCC

News about Chalk River's Tandem Accelerator Superconducting Cyclotron facility for users and potential users

Printed 1992 July 10

Operators finish cyclotron training

TASCC operations crews celebrated completion of formal cyclotron training this month with a small dinner and awards ceremony. The five three-man crews recently finished writing a formal examination, with excellent results.

Because of our shift operation, training lectures had to be given to each shift crew separately. Up to 12 hours of lectures were produced and presented to each crew by TASCC's Helena Lindqvist. They covered all aspects of cyclotron beam production and were videotaped for future reference. The course also included refresher lessons and question sessions. Hands-on training at control room consoles is currently continuing as the need arises.

The exam covered cyclotron theory in general as well as beam injection, acceleration and extraction with the TASCC superconducting cyclotron. Handling of common operational problems was also covered in detail.

As a result of this successful program, operations crews are now able to maintain and even improve beam characteristics during production runs.

Cyclotron completes 100th run

The superconducting cyclotron was operated for the 100th time this month. The landmark run produced 35 MeV-per-nucleon magnesium-24 for detector tests.

The cyclotron was first run in July 1985 when a series of charge-state measurements were taken for iodine-127. The first production of beam for a physics experiment was the 10th run, in March 1986.

Since then, there have been 30 experimental runs using cyclotron beams. The percentage of runs currently being scheduled for physics experiments is around 80%. In fact, so far this year, eight of the 10 new cyclotron beams produced have been used in experiments.

To date, 52 cyclotron beams have been produced, covering 13 different elements, with energies ranging from 3 MeV per nucleon for uranium-238 to 50 MeV per nucleon for carbon-12.

Call for articles for newsletter

In an effort to make this newsletter as relevant as possible to our readers, we invite you to submit short articles for inclusion in future issues.

Articles should be timely, of relevance to other newsletter users and preferably be about work performed at TASCC.

The deadline for each month's issue is the first week of the following month. Please send your contribution or comments to the editor at the address given on the last page of this newsletter.

July-August newsletters will be combined

Commencing this year, the July and August issues of the TASCC monthly newsletter will be combined in one issue. The double issue will be printed and distributed in mid September.

Facility report for June

Beams were provided to the following target locations this month: to ISOL for two separate experiments; to the 8π spectrometer for two high-spin studies; to the AMS station to measure samples; to the 1.75-metre-diameter scattering chamber for counter tests; and to the Ortec chamber for gas-release studies. As well, two days were used for operator training with cyclotron beams.

Beams produced by the Tandem were: 14.5 MeV protons; 23 and 65 MeV magnesium-24; 158 MeV silicon-30; 100 MeV chlorine isotopes; and 23 MeV bromine-81.

The cyclotron was opened once to adjust the deflector gap and assess damage to a beam-diagnostic device. An attempt to extract 50 MeV-per-nucleon lithium-6 was thwarted by water leaks in diagnostic radial probes.

Two facility maintenance days were scheduled in June for regular beamline maintenance tasks.

29-01

R

June experiments

Experiment	: Study of apparent irregularities in the high-spin behaviour of gadolinium-149 with the 8π -spectrometer. Data suggest that a much weaker staggering exists than that deduced from earlier experiments. The experiment extends at least one of the two excited SD bands seen in this nucleus.
Researchers	: S. Flibotte, B. Haas, J.-P. Vivien (<i>Strasbourg</i>); S. Mullins, D. Prevost, G. Hackman and J.C. Waddington (<i>McMaster U.</i>); S. Pilotte (<i>U. of Ottawa</i>); H.R. Andrews, D.C. Radford, A. Galindo-Uribari and D. Ward (<i>TASCC</i>); V.P. Janzen (<i>TASCC/McMaster U.</i>)
Beam	: 158 MeV $^{30}\text{Si}^{+10}$
Duration	: 11 days
<hr/>	
Experiment	: ISOL-group search for non-analogue $O^+ \rightarrow O^+$ beta branches in the decay of manganese-50. A candidate branch was observed at the 5 ppm level.
Researchers	: E. Hagberg, V.T. Koslowsky, J.G. Hykawy and J.C. Hardy (<i>TASCC</i>)
Beam	: 14.5 MeV protons
Duration	: 3 days
<hr/>	
Experiment	: Commission the Forward Array in the 1.75m scattering chamber, including a new inner ring of 16 phoswich detectors and 48 new electronics channels. Tests were also performed on coincidence timing between the CsI(Tl) miniball and the 32-element Laval detector array.
Researchers	: D. Horn, G.C. Ball, A. Galindo-Uribari, E. Hagberg, M.J. Steer and T.G. Whan (<i>TASCC</i>); R. Roy, L. Beaulieu and M. Gourde (<i>U. de Laval</i>)
Beam	: 35 MeV/u $^{24}\text{Mg}^{+11}$
Duration	: 7 days
<hr/>	
Experiment	: AMS measurements of the chlorine-36 content in 70 samples of air, water, rock and standards.
Researchers	: H.R. Andrews, V.T. Koslowsky, Y. Imahori, W.G. Davies, J.W. McKay, B.F. Greiner and J.C.D. Milton (<i>TASCC</i>); R.R. J. Cornett, G.M. Milton, L.A. Chant, S. Causey and D.J. Rowan (<i>Environmental Research Branch</i>)
Beam	: 100 MeV $^{35, 36, 37}\text{Cl}$
Duration	: 5 days
<hr/>	
Experiment	: Search for exotic shapes in dysprosium-152 with the 8π spectrometer and CsI(Tl) miniball using symmetric collisions. A particle-tag and an isomer-tag were used to isolate the channel of interest.
Researchers	: A. Galindo-Uribari, G.C. Ball, R.W. McLeod, D.C. Radford and D. Ward (<i>TASCC</i>); V.P. Janzen (<i>TASCC/McMaster U.</i>); T.E. Drake, M. Cromaz and J. de Graff (<i>U. of Toronto</i>); J. Rodriguez (<i>McMaster U.</i>) and S. Pilotte (<i>U. of Ottawa</i>)
Beam	: 4.37 MeV/u $^{81}\text{Br}^{+12}$
Duration	: 7 days

Next month.....

- Seven-day facility shutdown for maintenance to Tandem and de-ionized water system
- Study of superdeformed bands with the 8π -spectrometer
- Commissioning of experimental particle reactions setup
- Study of high-spin states in neutron-rich nuclei
- RTE for bromine-79 in gold
- Test of new control software for AMS

Facility operating record

Elapsed Time (Year-to-date)	4320 h
Beam Available	
Tandem Only	2201.3
Tandem + Cyclotron	664.0
Beam Development	834.2
Planned Shutdown	326.0
Forced Shutdown	294.5

Editor: Larrie Thomson
Tandem Accelerator Superconducting Cyclotron
Facility
AECL Research, Chalk River Laboratories
Mail Station 49A Chalk River,
Ontario, Canada K0J 1J0
Phone (613) 584-3311, extension 4131.
FAX 613-584-4024
Bitnet TASCC@CRL.AECL.CA



AECL

EACL

AECL Research

EACL Recherche