

ISAC Science Forum, 2004-05-26

PRESENT: Friedhelm Ames, Andrei Andreyev, Gordon Ball, John Behr, Pierre Bricault (PB), Lothar Buchmann (LB), John D'Auria (JDA), Paul Delheij, Jens Dilling, Marik Dombisky (MD), Jerome Gauthier, Greg Hackman (GH), Andrew Hurst, Dave Hutcheon, Peter Jackson, Rich Lang, Jens Lassen (JL), Bob Laxdal (REL), Phil Levy, Vincent Metivier, Kei Minamisono, Tad Minamisono, Colin Morton, Matthew Pearson, Jean-Michel Poutissou, S.C. Ravuri (RSC), Rene Roy (RR), Chris Ruiz (CR), Paul Schmor, Michael Schumaker, Martin Smith, Mike Trinczek, Pat Walden,

Notes transcribed by GH

Reports on Prior Beam times

E989 Test Run: Chris Ruiz

The DRAGON $^{26g}\text{Al}(p,\gamma)$ test runs on the 363 keV resonance were hindered by unstable beam due to HV breakdown in the ISAC source, which had just been installed and was running at an unusually high voltage. Nevertheless, useful data were collected. Isobaric contamination of $\sim 10\%$ ^{26m}Al and ^{26}Na was measured from the decay curves of activity dumped on DRAGON mass slits. This was higher than in previous measurements at GPS ($\sim 5\%$) with a well-used target. No evidence of the $^{26}\text{Mg}(p,\gamma)$ reaction was found limiting the contamination of that stable isobar to $<0.1\%$. "Leaky" A=26 beam could be separated from the ^{27}Si reaction product with the gamma coincidence. The 363 keV resonance strength was estimated to be ~ 45 meV; given uncertainties in transport and detection efficiencies, this was in reasonable agreement with the previously measured value of 65 meV. More beamtime in June was requested to characterize the contamination level more accurately, confirm efficiencies and test a low-threshold β counter and a MCP-PGAC local TOF, both to be installed shortly.

In the subsequent discussion, it was clarified that there was adequate ^{26g}Al yield for the 183 keV measurement, and that the determination of ^{26m}Al , ^{26}Na isobar contamination was needed to determine actual ^{26g}Al incident beam from Faraday cup readings of A=26 current. Batch mode had previously been rejected for low duty cycle and for risk of thermal damage to the target. It was pointed out that one could schedule one target solely for this high-priority experiment (PB) and that under normal operating conditions the release time of Al was about 1.5 hours (MD). JMP encouraged MD to look back at existing yield data to determine the effect of target aging on isobaric contamination ratio.

E824: John D'Auria

This thesis experiment, which was run prior to the E989 test run above, received only one useable shift out of seven scheduled, which was inadequate to perform a useful measurement. REL and PB noted operational difficulties associated with starting up a fresh target on a Friday evening at an unusually high source voltage with a small crew of fresh operators.

E871: Kei Minamisono

KM presented his measurements on beta asymmetries of polarized and aligned ^{20}Na in Mg and ZnO samples, including nuclear quadrupole resonances. KM will perform a reference measurements in TiO_2 for Q of $^{20,21}\text{Na}$.

ECR Tests: Pierre Bricault

PB reported his ongoing ECR source tests. He repeated that Ar needed to be injected to clean C off the quartz tube in the ECR region; even so, Ne ionization efficiency dropped from 2.3% to 0.2% after having run with beam for several days. PB would like to try using Ar alone as the support gas (with no He); however this required modifications to the gas handling system, as the flow controller for Ar did not provide fine enough control. These tests continue.

Report on Upcoming Experiments

β NMR: Jean-Michel Poutissou

JMP for Rob Keifl reported nothing special for the upcoming β NMR runs.

Other Reports

Actinide Target Task Force: John Behr

JB presented a summary of the status of the actinide target plans. Section 7.2 of the interim report (2002) has been updated to reflect recent developments. JB pointed out that the critical path items are currently target fabrication and α monitoring. In the ensuing discussion concerns were raised about a proposed 30 μA test, but it was pointed out that given the now well-known effects of radiation enhanced diffusion, it would be much more representative of future ISAC operations to perform a test on a "thin" actinide target with high current than on a thick target with low current.

Links to relevant documents:

JB's presentation: <http://trshare.triumf.ca/~hackman/public/ISACForum/taskforum.pdf>
(note: E921 also requests beams from an actinide target)

Task force report: http://www.triumf.ca/EHS/EHS_NEW/publications/ATTF_Report.PDF

Update: <http://trshare.triumf.ca/~hackman/public/ISACForum/revisedSection7.2.pdf>

Heracles: René Roy

RR and his students are here for the summer and fall of 2004 and the fall of 2005 to assemble and perform tests on an upgraded Heracles charged particle detection array. Stable beams at ISAC energies are needed in short order, as is some DAQ support and a scattering chamber. Several suggestions were made for using existing (e.g. proton hall) scattering chambers or even a simple cross. JMP requested a detailed technical report on RR's plans.

NEXT ISAC FACILITIES MEETING: June 2

NEXT ISAC SCIENCE FORUM: June 9