

## ISAC Science Forum, 19 Jan 2005

Present: Friedhelm Ames, Andrei Andreyev, Gordon Ball (GCB), John Behr, Pierre Bricault (PB), Lothar Buchmann, Jac Caggiano, Thomas Cocolios, Barry Davids, Paul Delheij, Jens Dilling, Marik Domsby, Greg Hackman (GH), Dave Hutcheon, Peter Jackson, Jens Lassen (JL), Bob Laxdal, Phil Levy, Dan Melconian, Colin Morton, Matthew Pearson, Jean-Michel Poutissou (JMP), S. Chakravarthy Ravuri, Alan Shotter, Mike Trinczek, Pat Walden, Jim Waddington.

Notes taken by GH

### TRILIS: Jens Lassen

JL reported on the first on-line running with TRILIS, with two-step excitation to an autoionizing Rydberg state. The lasers were moved down to the TRINAT room, and laser beams transported to ITW. Alignment of the beam was done with a power meter before the target was fully installed and closed up; position of the beam reflected off of an entry window was noted and was used during the experiment to verify beam position. Some long-term wandering of the beam was noted. Initially, the effect of the lasers was not large –  $^{62}\text{Ga}$  yield for example changed from  $1.2 \times 10^3/\text{s}$  with no lasers on to  $1.5 \times 10^3/\text{s}$  with lasers on as measured at the yield station at the beginning of these runs, but after about three days of running with proton beam on target, the numbers were  $0.2 \times 10^3/\text{s}$  off vs.  $1.5 \times 10^3/\text{s}$  on. JL suggested several possible improvements, including use of a second tripled beam to access both splittings of the ground state, higher duty cycles and pulsing, other experimental optimization. JL intends to investigate alkaline contamination suppression, competing ionization processes, adaptations to ion source components, more efficient schemes, laser-to-other ionization efficiencies as a function of ionizer temperature, and saturation intensities. (Many of these could not be tested due to time constraints and pressure to deliver to E823.) Currently his priority is developing an aluminum excitation scheme, and that the most promising scheme with a frequency-tripled first step will require pushing the laser tuning ranges. He noted that lanthanide beams could be developed fairly quickly and easily. JL also noted that with only one laser system and with only one off-line ion source development station, there is a serious bottleneck to developing new beams.

There was much discussion. It was noted that this ion source did not have a rhenium foil ionizer, in fact the source was electroplated with TaC, which was expected to suppress surface ionization. However, PB noted that carbon itself would be a good ionizer. JL noted that any variation in the on/off ratios for various isotopes of Ga could be attributed to technical difficulties; the lasers were twice as broad as the hyperfine splitting. JMP asked about operational issues; JL noted that one laser ion source expert had to be on site at all times to monitor and adjust the source, the ISAC operators were unable to do it.

JL's presentation concluded with congratulations from JMP and a round of applause.

### E823, $^{62}\text{Ga}$ : Gordon Ball

Given the observed yields and time available working around JL's development efforts, it was decided to focus this run on a high precision measurement of branching ratios. An average of 1600/s  $^{62}\text{Ga}$  were delivered over six shifts to the  $8\pi$  and SCEPTAR. Several previously unreported gamma rays were seen, and could be placed in the decay scheme based on candidate  $^{62}\text{Zn}$  states observed in (p,t) reactions. Also, a sample of  $^{66}\text{Ga}$  was collected and counted to provide high gamma-ray energy efficiency and lineshape calibration data both for this run and the previous  $^{11}\text{Li}$  run. GCB estimates that the Cu background was reduced by a factor of 20 compared to the first run (with surface ionizing) from 2003.

There was much subsequent discussion about competing experiments and alternative measurement techniques.

**Upcoming beam schedule: Jean-Michel Poutissou**

A tentative source-and-target schedule was presented; however, JMP is willing to consider alternatives, and encourages users to provide beam requests that may not be consistent with that tentative plan. **Furthermore, JMP strongly encourages all users to plainly state the dates that they cannot run.** There was also some discussion of the outcomes of the EEC meeting. A summary is currently available on the TRIUMF website, and JMP intends to post the full report after allowing the users to review and possibly challenge the results.