ISAC Science Forum, 2004-03-17

PRESENT: Jean-Michel Poutissou (JMP), Pierre Bricault (PB), Miguel Olivo, Jens Lassen (JL), Mike Trinczek, Colin Morton, Gordon Ball (GCB), Greg Hackman (GH), Matthew Pearson, Roger Poirier, Vijay Verma, Pat Walden, Alan Shotter, Peter Jackson, Paul Delheij, Barry Davids, Jens Dilling, Allison Laird, John D'Auria (JdA), John Behr, Alex Murphy, Dave Hutcheon, Rick Bartmaan (RB), Paul Schmor (PS), Martin Smith, Lothar Buchman (LB), Phil Levy (PL), Marik Dombsky (MD), Tom Davinson (TD), Zaher Salman (ZS), Andy Hurst

Notes transcribed by GH

NOTE: All future speakers, please arrange to use a laptop for your presentation, or bring paper copies of your materials, as our overhead projector is not well suited to transparencies. Thanks .. GH

TUDA-II at ISAC-II – Tom Davinson:

TD discussed what TUDA is (array of high-granularity silicon detectors), and discussed some of the reaction mechanisms for which TUDA is well suited to address selected contemporary nuclear physics issues. TD then presented a strategy that was being discussed within the TUDA collaboration to move to ISAC-II as early as 2005 Q1. This would broaden the range of experiments that could be performed. TD reported that according to Bob Laxdal, beams as low in energy as 0.5 MeV/u could be transported with good efficiency through the ISAC-II accelerator with adequate beam quality for these experiments. Further, TD pointed out that most of the "low-energy" program with TUDA required beam energies above 0.5 Mev/u.

LB pointed out that the ^{20}Na(^{3}He,p) experiment, which had already been attempted on ISAC-I, suffered from low cross section due to the low beam energy; 3 MeV/u would have been optimal. JdA suggested that the TUDA proponents should submit a specific proposal to the upcoming EEC for an experiment that would leverage ISAC-II beams.

Heated discussion ensued.

PS pointed out that ISAC-II would be unavailable during periods from late 2005 to 2007 while the high beta system was installed, and after 2007 when the low beta system was installed. PS said that these installations would not be confined to the cyclotron shutdown period. It was concluded that in order to plan their experimental programs, all users need access to a reasonable timeline of the ISAC-II installation plan detailing what beams ISAC-II will be able to provide, when it will be able to provide them, and most importantly, when beams will **not** be available. ACTION: PS.

PB asked about how much space would be needed for the experimental station. TD pointed out that turning the chamber around 180 degrees would allow for a beam dump close to the target chamber. He asserted that with the beam straggling induced made it impractical to focus and transport the beam, and that it made more sense to simply have a well-shielded dump with no optical elements.

Questions were raised regarding moving the TUDA electronics hut. TD reported that TUDA was operating at theoretical noise levels, indicating that all the effort put into clean power, proper grounding and shielding was effective.

At the close of this discussion, PB reported that there would be as design review of the experimental hall layout some time next week.

Ion Source Development -- Jens Lassen

JL reported on TRILIS development. Highlights from this report are:

- 2-step ionization of Al, Ga works; 3-step expected to be better
- Repeller needs some improvement
- TU Darmstadt Ph.D. student will do thesis work on ionization schemes and beam development
- Frequency tripling is **not** available with present setup – Be is currently out of the question.
- Online tests will commence Oct. 4.

In the discussion, questions were raised regarding the priorities for beam development. JL responded that there were EEC approved experiments with Ga and Al. It was pointed out that there were several approved experiments spanning a wide range of chemicals requiring laser ionization, including Mg. In response, JL indicated that Mg was a beam he liked, and that in terms of developing ionization schemes, lanthanides and actinides were less complicated, and low-Z atoms were relatively difficult. PB added that it was possible say right now whether or not a beam could be produced, but that it would take up to several months from the moment a critical decision was made to develop that beam to the time it was available. Further discussion made it clear that there was no formal guideline or priority list for developing beams. JL indicated that the ionization of Al would rise from 0.6% from surface ionization to up to 50% with laser ionization, and it was noted that if this was achieved ISAC would have by far the most intense Al beams available; however, MD cautioned that even so there would not be adequate ^{26m}Al yield for some EEC approved experiments.

RIA Workshop Report -- Paul Schmor

PS gave an overview of technical and political aspects of a recent RIA workshop.

Visits to India -- Paul Schmor and Gordon Ball

PS discussed facilities he visited as part of an international committee reviewing RIB development in India.

GCB mentioned that the science program in India was actually quite broad, as it included several user facilities and a large degree of international collaboration. One highlight he discussed was an experiment to investigate the $^{7}Be(p,\gamma)^{8}B$ reaction in inverse kinematics, where the ^{7}Be is first produced by impinging a ^{7}Li beam on a CH_2 target and transporting it through an electrostatic separator. GCB also mentioned an active theory group that focused on relativistic mean field experiments.

Upcoming Experiment: βNMR: Zaher Salman

ZS indicated that there were no major changes needed for the upcoming βNMR run. They intend to implement the suggestions from the previous meeting. only that they would like to run at 30.0 keV instead of 30.6 keV as the power supply for their high-voltage cage only goes to 30 keV. No problems were anticipated by RB or PL to associated changes to beam optics and polarizer tuning. ZS said they had several samples of superconductors and superlattices from Stuttgart and one from SFU that they would be probing in this beam time.

AGENDA ITEMS PROPOSED FOR NEXT MEETING, 2004-03-31:

- Report on previous experiment (Beta-NMR) -- speaker TBA
- Report on upcoming experiment (E909, 8π: ^{26}Na) --speakers TBA
- Prospects for accelerated ^{26}Al beam experiments -- Chris Ruiz, MD
- Discussion of ECR performance and impact on science program; to be based on a report by PB to be distributed prior to the discussion (ACTION: PB)
- Report from Beam Development Working Group – JMP
- Progress on ^{11}C “alternate production” technique -- JdA