Minutes of the Beam Development Strategy Committee Meeting

May 19th, 2016 at 13:00 in the ISAC-II Conference Room

Present:
J. Dilling (Chair), C. Ruiz (Secretary), B. Davids*, A. Garnsworthy, P. Kunz, J. Behr, M. Marchetto, B. Laxdal, F. Ames, A. Gottberg

*Thanks to Barry for providing more detailed minutes than the secretary!

JD Started off proceedings by stating that CR will be "scientific secretary" of committee, i.e. responsible for coordinating meetings and ensuring spreadsheets etc are up to date.

Some discussion of committee makeup. Important that try to schedule meetings when Jens Lassen present too. Colin Morton should have been invited.

1. Some news updates:

Rotating Beam in BL2A:
55 µA was achieved in rotating beam test; Li yields are improved; could be used during running e.g., beta NMR; annular foils only increase yield by ~25% (based on surface area, when compared to "D" shaped foils); rastering needs to be further developed for stability/reliability before annular targets used as matter of course. Hardware & Power supplies in place but better optics need to be worked out, and some controls work.

Possible RF "Booster" in LEBT:
ISAC target modules are presently limited in bias voltage, preventing a variety of molecular or atomic beams of a certain mass range from being accelerated without CSB (and thus not at high intensity). As a summary, TM1 is limited to ≤ 24 kV, and can only use the SIS, no cooling on proton window -> limited to ≤ 10 µA; TM2 limited to ≤ 54 kV and has small leaks in cooling lines; TM3 is limited to ≤ 16 kV and refurbishment has started; TM4 is limited to ≤ 55 kV. Just upstream of RFQ we could place an RF cavity with 8 kV accelerating voltage; the basic idea is well-established; target modules will be refurbished/improved but can pursue both in parallel; 2 months of tech time to install hardware; conceptual design complete. Must be coupled to ISAC RF; Is it worth the effort and cost? no overlap with target module team. RF, low energy beamline; >$50k; Must survey books to see how many experiments require it --> CR can look into this. TM3 refurbishment will require at least 2 years. No conflict with ARIEL.; efficiency may be reduced by ~50% due to emittance increase; This only benefits mass range A=26-30, however this seems to be a critical range for some astrophysics beams, including molecules with light-mass radioactive nuclei of prime interest which do not appear at

high intensity in atomic form. Thus at present there are some nuclei (such as 11C, 15O) that are totally out of reach.
-- This item was approved by committee with high priority and should be revisited in more detail in subsequent meetings.

2. Master Beam Development Spreadsheet

An update of master spreadsheet will be done as a homework exercise for Chris and Friedhelm, taking backgrounds etc. into account. Want to avoid experiments with adequate yield but too much contamination. In the sheet, the Facility for experiments is missing, which is crucial info. In fact, should be presented sorted by facility in another sheet for reporting purposes. Development types are included. Yield numbers should be taken from Peter Kunz's database, with appropriate averages (e.g. geometric mean?). There are errors in database, e.g., minimum intensities are sometimes optimal intensities. Expected development time needs updating. 2 year horizon for developments. If nothing has been done in that time, this needs to be addressed. Priority can be increased or can be removed. Priority III items can be done only if there's overlap with a higher priority development.

These meetings should identify priority developments that impact many potential beams, and choose 2 or 3 of them to do over 12-18 months. Evaluate at that point. Communicate to users what the schedule for development is, and updating the feasibility of beams. Can do one material, one ion source, etc.

New categories: program, facility, development group. Subcommittee chaired by Chris including acc. div personnel should address actions. They will then initiate the next larger committee meeting. Want to have executable action items to be communicated at the ARIEL science workshop and implemented in the next schedule. Must carefully consider what development plans will be revealed publicly.

Spreadsheet is not a plan, it is a database. We need to extract from it a plan with near term and mid-term goals. Communication strategy can emerge.

Peter's database is accessible internally via http://isys01.triumf.ca/search/yield/data.

Our public database is the most frequently updated of any ISOL facility.

Should look at things 2 ways: best bang for buck, and then physics priority. Some developments can be done offline, at least 1/2.

CR will update spreadsheet with FA (and possibly AG and PK) before calling the next meeting, which will discuss strategy and formulate action items to generate a plan.