

## g2p target meeting minutes

2<sup>nd</sup> Sept. 2010

**Discussions:** J. P Chen, Don Crabb, Chris Keith, Al Gavalya, Ed Folts, Dave Meekins, Hovhannes Baghdasaryan, Josh Pierce, Narbe Kalantarians, Doug Higinbotham, Kalyan Allada, Jixie Zhang et al.

1. Don Crabb described procedures for irradiation of the target :
  1. Target is immersed in liquid Ar
  2. Beam current used : 10-15uA
  3. Beam profile : 2cm diameter (full width)
  4. Beam energy of 30-40MeV
  5. Rotate target every 30mins
  6. Typically  $10^{17}$  electron/cm for the beam
  7. Takes about 2.5 to 3 hours to complete the task
  8. Good to keep energy lower to avoid producing Chlorine from Argon ( higher the beam energy, higher the production of Chlorine)
2. Irradiation at FEL :
  1. Need better shielded dump
  2. Beam can be rastered, which is preferred by target group
  3. Can deliver 135Mev max or 60 to 70MeV minimum beam energy
  4. Another option is to provide 10 MeV from the injector itself
  5. Cost/scheduling/shielding implications of installing new dump has to be discussed and after that FEL folks will get back to us
3. Scattering chamber (Al/JP Chen)
  1. Design for 90/70degrees Al (8mil) windows and 20 mil Be window is ready
  2. Al Gavalya needs to know several design aspects. For eg. cryogenics orientation with respect to the magnet, beam direction etc. Chris Keith will look at Al's design and confirm the setup.
4. Dump Issue:
  1. Kalyan Allada have forwarded the target material thickness list to Pavel for his calculations of the dose rates.
5. Issues with higher beam current running
  1. Need 30uA run for Compton measurement
    1. Beam goes straight through, polarized target is not required to be in place
    2. Compton runs will be taken likely at the beginning/end of the expt. We mostly depend on Moller measurement for the beam polarization.
  2. Need high current run for optics with carbon target ( can be little lower than 30uA, need to check)

3. Target boiling issue ( problem) with high current runs. Need to come-up with a run plan that takes into account the downtime etc. for these high current runs
  4. Optics runs will be taken few times during the expt.
  5. Hovhannes mentioned that during SANE 1uA current with carbon target worked fine
  6. Dave Meekins mentioned that scattering chamber windows were water cooled in Hall-C for 30uA run. He will look more into it for this experiment
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6. Issue of nitrogen target –  $^{14}\text{N}$  vs  $^{15}\text{N}$ 
    1. For nitrogen-14 we have data from previous small angle GDH experiment for comparison
    2. No known data available with nitrogen-15
    3. Hovhannes will provide a rough estimation of the systematic uncertainty
    4. JP mentioned that the experiment aims to achieve 3 to 5% precision on the cross-section, so try to minimize systematics as much as possible
    5. Errors related to solid nitrogen density/packing fraction etc will be significant. Don will provide some numbers from previous experiments
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7. Magnet status (Don Crabb)
    1. Waiting for making cones in the coils
    2. Went upto 5.1T field and stayed there without a quench
    3. Tightened the stress bolts
    4. Back-up refrigerator work is going well
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8. Chris Keith will provide new estimation of things that needs to be bought
    1. New pumps cost 45k