Target Commissioning

PT Magnet Commissioning:

Continue to run the magnet and fridge with new MFCs installed and optimize temperature control in the fridge. Use irradiated CH2 and CD2 to polarize and test the full system by polarizing and taking multiple TEs at different temperatures. Stress test the entire system under all operational modes.

Beam-target Commissioning:

The next step is to see at what intensity we can run without quenching. This part has been previously outlined in the quench commissioning note. The focus is on finding the intensity threshold which would require the completion of the critical path electronics for monitoring purposes. There would be a set of intended quenches done to understand and reproduce thresholds and study optimization of the magnet pumping cycle and present coil temperature regulation system. The geometry and materials of the target insert may need to be modified to get the lowest background rates. This may end up being different for NH3 and ND3. This part of the commissioning is expected to take about three weeks. See Quench Commissioning

It would also be good at this point to run our first calibration target. This may be something like a carbon disk of well know thickness and density and well-understood DY cross-section to use rates and distributions to tune our MC. Multiple nitrogen and LHe with and without insert are also required.

Initial Run-plan:

We should start with NH3 as it is much easier to work with and easier to polarize and measure. There are several details to be worked out about the highest intensity and stable cryogenic operations as well as system monitoring that can only be worked out once everything is set up and running with an active polarized target system. This phase of the run-plan I estimate to be about 3-4 months. We should be able to gain all the information we need on polarization decay and measurement as well as figure out whatever insert modification might be needed to limit background rates and monitor polarization with NMR coil geometry, etc… We should expect to flip polarization in a non-diurnal cycle in this initial run plan and attempt a few thermal equilibrium measurements.

Target-Beam Alignment