

NPS Action Items for 2016

NPS Magnet

- Check magnet design with use of BNL ex-MPS magnet steel
- Check for mechanical interferences
- Provide detailed design drawings for magnet steel cuts
- Design the infrastructure for support and mounting the sweeper magnet
- Secure G0 experiment rails for magnet and detector longitudinal motion

NPS High-Voltage Bases

- Optimize the C-W design and provide an update in March 2016
- Decide on final HV Base design
- Start on HV base construction

NPS Crystals and PMTs

- Finalize setting up infrastructure for crystal tests at IPNO and CUA
- Characterize SICCAS crystals and investigate crystal to crystal variations and systematic uncertainties between tests at various facilities.
- Decide on PMT readout and magnetic shielding.
- Decide on PbWO₄ crystal dimensions and requirements for NPS

NPS Frame and Support

- Start work on design drawings for NPS calorimeter, cooling mechanism
- Decide on crystal configuration in terms of PbWO₄ and/or PbF₂
- Start working on design of support structure – cantilevered platform for small-angle access, support on SHMS deck for large-angle access, use of G0 rails for longitudinal motion.
- Start work on integration of required monitoring systems.

NPS and Photon Source

- Continue work towards an optimized compact photon source design
- There seemed consensus/overlap that this source requires roughly a 2 Tm magnet field with 1 m length, as close to the polarized target as possible (roughly 1 meter), with about a 2-3 mm collimator.
- Radiation Control issues of compact magnet source and backgrounds need to be worked out.

Future NPS experiments

- Work out the case of Time-Like Compton Scattering with a transversely polarized target. What is unique of the NPS for this physics? What are the projections with and without NPS?
- Possible enhancement of FOM of proposal with polarized wide-angle Compton Scattering using optimized photon source and setup.