

NPS 2018 Action Items

- Finalize complete NPS detector frame mechanical design
 - Finalize light monitoring and curing systems concepts and integrate with design of NPS frame
 - Finalize integration of temperature-stabilization system at 18° C
- Finalize designs for fringe field mitigation for PMTs including the beam dump line, for NPS at small angles, and the HMS snout, for both NPS and HMS at small angles
- Finalize design of fringe field of sweep magnet on HMS optics
- Finalize NPS magnet (steel, main coil, and corrector coil)
 - Assemble magnet
 - Map NPS magnet at low current
 - Map NPS magnet to confirm fringe fields – **2019**
- Complete design of platform for NPS, both the cantilevered support at small angles, and the platform on the SHMS carriage for NPS at large angles.
 - Complete design of support of cantilevered platform for NPS at small angles Complete design for cooling water and power lines for the magnet, and electrical power on the NPS detector platform
 - Complete design of removable guard (personnel safety) rails as needed for NPS detector frame access at small angles during maintenance periods
- Finalize cabling concept, DAQ and electronics
 - Complete final cabling layout for high-voltage and signal cables
 - Complete layout of patch panels and DAQ/electronics racks in SHMS hut
 - Complete a full chain test of fADC readout with the NPS 3x3 prototype, including PMTs+HV dividers and readout system
- PbWO4 crystals
 - Test 500 crystals
 - Move 100 crystals to Hall D
- Frame
 - Decide on carbon structure
 - Finalize integration of temperature stabilizing system, investigate cooling option
 - Decide on cable connectors
 - Determine placement of monitoring and curing systems
 - Decide on crystal wrapping material
- PMT and HV bases
 - Finalize concept for board layout and connectors for HV and signals – depends on final design of calorimeter temperature-controlled box and location of HV and signal patch panels
 - Decide on connectors

- Production of HV dividers
 - Prepare assembly manual in collaboration with JLab
 - Determine voltage margin and study temperature stability with gain
- Software and simulation development
 - Online software
 - Offline software: reconstruction - **2019**
- Compact optimized High-Intensity Photon Source
 - Remove condition from polarized WACS experiment
 - Add polarized target, check shielding optimization
 - Decide on what engineering items needed for internal review document
 - First engineering changes for Hall D after Hall A/C done
 - Submit KLong experiment proposal to PAC46
- Future physics with NPS and CPS
 - For TCS, address three points:
 - 1) does experiment with NPS and transverse target provide unique access to GPD E/orbital angular momentum
 - 2) is it competitive with other methods on the market, e.g., HDICE,
 - 3) Impact of secondaries on detector operation
 - Consider further high-quality unique science that could be considered with the NPS, with availability of intense electron and photon sources.