CPS ACTION ITEMS 2020

Radiation Simulations and CPS conceptual design

- Check configuration with smallest amount of W and add a small (1-inch) layer of Pb – check impact on activation
- Get a set of numbers for radiation level requirements from RadCon in Hall and along beam line
- Further optimize material configuration – e.g., try Pb in backward lower-energy photon region
- Develop documentation and distribution version of simulation

CPS design and construction

- Continue working towards funding for CPS
- Investigate if magnet E&D and coil integration and assembly can be done as part of contract
- Obtain high-level beam layout with CPS conceptual design integrated to look at next steps (supports, beam line integration, small beam girder, etc.)

CPS Adaptation to Hall D

- Decide on magnet length vs. raster location
    - Assume to start with magnet 4x longer than CPS, and half-field, to handle twice power
    - Need information from Hall D
        - Where can the (first) raster be located?
        - What are the focusing requirements – where should the focus be located?
        - What are the radiation level requirements in the tagging area and in Hall D?
- Make a first model of magnetic field for Hall D
- Work on radiation shielding simulations for Hall D

CPS Science: KL conditionally approved experiment

- Aim for full approval
- In presentation to PAC consider including:
    - Timeline for activities
    - List of resources needed, both from Jefferson Lab and from collaboration
    - Neutron flux from CPS and Be target in Hall D
    - Highlight CPS Hall A/C activities and progress and benefits of this collaboration

CPS Science: Timelike Compton Scattering

- Determine quantitatively if low energy protons can be measured after the polarized target high magnetic field – do they leave the field? Do they leave the scattering chamber?
    - Make a 3D simulation and for selected bins show the trajectories of proton (and electron) and where they hit the detector in t, phi, etc., in particular at low momentum
    - Check the simple example of phi plot correlations: plot phi=0/theta=0, phi=0/theta=45, phi=0/theta=90deg, etc., and see if the correlation, and where the detector is hit, changes
- Quantify the unique impact of TCS with polarized target on hadron imaging studies
- Show how TCS with polarized target complements other approved Compton Scattering experiments (DVCS, TCS, WACS) at JLab.
- See if other group of people is interested to see if small TCS experiment with unpolarized target adds value as compared to approved Hall B and Hall A/SoLID experiments