XLII PANDA Collaboration Meeting

PARIS, 10 September 2012

Electromagnetic Physics session

A few remarks to start the discussion

B. Ramstein, D. Marchand IPN Orsay

Electromagnetic Process working group What are the goals ?

Discuss physics and technical issues specific to Nucleon structure studies using ElectroMagnetic Process measurements

→ Identify important measurements

→ Perform feasibility studies

→ Eventually write experimental proposals for electromagnetic processes with PANDA

Defining interesting measurements

PANDA Physics Performance Report:

- ✓ Time-Like proton form factors ($\bar{p}p \rightarrow e^+e^-$, $\bar{p}p \rightarrow \mu^+\mu^-$, $\bar{p}p \rightarrow e^+e^-\pi^0$, $\bar{p}d \rightarrow ne^+e^-$)
- ✓ Generalized Distribution Amplitudes ($\bar{p}p \rightarrow \gamma\gamma$, $\bar{p}p \rightarrow \gamma\pi^0$)
- ✓ Transition Distribution Amplitudes ($\bar{p}p \rightarrow e^+e^-\pi^0$, $\bar{p}p \rightarrow e^+e^-\rho$)
- ✓ Transverse parton distributions in Drell-Yan production ($\bar{p}p \rightarrow \mu^+\mu^- X$)
- ✓ Interest of polarized beam/target

To go further….

- ✓ New ideas of useful measurements ?
- ✓ Exploit results from BES (Time-Like Form factors,….), Jlab (GPD, TDA,…) , complementarity with electron scattering experiments (Jlab, Mainz,…)
- ✓ Radiative corrections, 2 photon exchange
- ✓ Phenomenological Models → event generators for feasibility studies (signal and background)

joint discussions with the Theory Advisory Comittee?

Continuing feasibility studies

- **Full-scale simulations studies:**
  - ✓ Existing in the BABAR framework only for some processes (form factors, TDA,..)
  - ✓ Other studies with event generators (Drell-Yan, GDA,…)

  → Perform feasibilities studies for all interesting processes with new software (PANDAROOT) and updated detector geometry

- **Still open technical issues:**
  - ✓ Polarized beam/target
  - ✓ Trigger for Electromagnetic Processes *(with DAQT-FEE)*

- **Realistic description of the response of key detectors**
  - ✓ EMC
  - ✓ tracking system
  - ✓ dE/dx information from STT

  } with detector and computing working groups

- **Specific algorithms** for electron PID and momentum resolution *with computing working groups*

How to work in the EMP working group

- **Forum:** https://forum.gsi.de/

PANDA » PANDA - Physics » PANDA – EMP *discussions*

- **Mailing list :** PANDA-EMP@WWW-LISTSERV.GSI.DE

Please subscribe (19 subscribers only up to now)

Information exchange

- **Wiki page** ? *Documents* (intermediate results, talks….)
- **PANDA CM parallel session.**
- **EVO meetings?**
- **Sub working groups** ?
  - By channel (e^+e^-,$e^+e^-\pi^0$, $\gamma\gamma$,….) ?
  - By topic (physics generators, PID and momentum reconstruction, trigger,…)?