Dear All,

It is time to start our work on new experimental proposals for the upcoming PAC48 (?) in a more organized and focused way.

So far, more or less, these are draft ideas being discussed in the meetings (except from the

actual DRad proposal done some years ago).

1. It looks like we want to have two separate proposals: PRad-II and DRad but package them as a group to have more chance to pass and possibly to run.
2. We also want to have a PrimEx-IV proposal for the pi0 transition form factor measurement at very low Q2 rang (<0.2 GeV2). This proposal will also include a search for new vector vector boson (dark-omega) search in one experiment. The experiment(s) will be performed with the same new PRad-II setup, only target needs to be very thin 12C or 28Si (there are questions on this part, needs more work!). This proposal also will be included in the package of PRad-II and DRad (needs more discussions).

Here is very draft list of ideas, discussed in past, that I think we have to start doing before the upcoming Collaboration meeting (either on Oct. 25 or Nov. 1). At least, we have to start documenting them and get more information.

1. For the PRad-II proposal: we better to come up with 2 new things for this proposal:

a.1) make the total uncertainty ~2 less;

a.2) try to reach, at least, factor of ~2 less Q2 range

1. How we can do that?

b.1) add the second plane of GEM (obvious);

b.2) upgrade HyCal to all PbWO4 crystals (not obvious but needed);

b.3) upgrade the readout electronics sytem (from FASBUS to FADC based) (required);

b.3) include a lower beam energy setting, say 0.7, 1.4 and 2.1 GeV (doable but has a lot of work and MC simulations to prove that we are gaining in the Q2 range);

b.4) design a better beam line before our target. Need to discuss how.

b.5) sizably improve the vacuum in the experiment (doable)

b.6) check if the recoiled proton can be detected with the DRad’s (or Drad type!!!) recoil detector (need MC simulations and work)

1. For the DRad proposal: This will benefit from all PRad-II improvements, pluss an updated Recoil Detector.

c.1) come up with a realistic uncertainty on the Rd;

c.2) solve the calibration “problem” for the Recoil Detector;

c3) ….

1. Parallel work will go for the pi0 TFF proposal (Ilya, myself and whoever want to work)

Again, to succeed, we need to start (or continue) in a more organized way from now on. Like:

1. reviewing the task list outlined here, adding, correcting them;
2. documenting the results and new problems to solve.

Thank you

Ashot