Plans for re-submitting TCS proposal in 2021

Main comments from PAC and TAC reviews:

1) need timing resolution of all component of the trigger and requirement for background
2) GEM in trigger?
3) PID only up to .5 GeV in P momentum
4) energy calibration stability due to radiation: evaluation of systematics
5) need full GEANT for e/pi calorimeter simulation
6) analysis cuts unclear and background level lack of information, need validation of MC
7) impact study from fits to provide with actual experiments precision

1) need timing resolution of all component of the trigger and requirement for background
Alexandre (& al) will help with designing the trigger and addressing issues. Alexandre joining efforts and we will work closely together in next few months understanding trigger, background from simulations...

2) GEM in trigger?
may not include GEM in trigger. Possibly using some SBS simulations to understand better GEM response for tracking, Vardan will see how its feasible

3) PID only up to .5 GeV in P momentum
no need of PID as long as resolutions good enough in various kinematics for exclusivity cuts and for defining t and xi (what we need for physics: resolution less than bin size with bin size adjusted to how much CFFs vary). Was presented to PAC in misleading way since reaction is exclusive

4) energy calibration stability due to radiation: evaluation of systematics

5) need full GEANT for e/pi calorimeter simulation
will study spectrometer response with full GEANT (Vardan & al). Some differences (optics, beam pipe...) with code developed by Carlos and Ho San, Vardan will contact them and figure out, then work for improving existing code and run more complete simulations

6) analysis cuts unclear and background level lack of information, need validation of MC
Marie (& al) will redo whole analysis in more standard way as in 2018 with exclusivity cuts..., full code exist for signal and basic pion MC based on Hall D fit. Need improvement (low energy emissions...). Background rates and dilution to double checked with AI method (Dustin)

7) impact study from fits to provide with actual experiments precision
will use other experiments uncertainties, however not always clear from proposals and not much data yet – impact mostly driven by complementary experiment for H. will update physics case