

Protocol for requesting PD-SP detector studies

Gina Rameika

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Your Inst Logo



Content

- Motivation for making this proposal
- Example of proposed studies
- Proposed format for making requests for studies
- Proposed procedure for getting work done
- Discussion

Motivation for this proposal

- We have a great detector sitting at CERN, seeing lots of cosmic ray interactions
- We have great ideas of studies we think will be useful
- We want to understand long term operational issues with our detector
- We want to be sure that the DUNE design is the best it can be, based on lessons learned with ProtoDUNE
- Over the next year we have limited people based at CERN who can carry out proposed studies
- Studies need to be well defined and thought out so as to be carried out in as efficient manner as possible.
- Studies need to be scheduled to make sure that the detector conditions and appropriate resources needed for the study can be properly arranged
- Any studies done need to be documented and any data taken needs to be analyzed in a timely way so that the results are available when and where needed

In addition

- While ProtoDUNE-SP can declare to have successfully met all of its high level goals, we know there are some limitations, in particular in regard to high voltage
- We also need to better understand what drives the limitations in purity
- We would like to understand correlations, if any, among parameters

A few examples of suggested studies (thanks to J. Stewart)

- Take cosmic ray data with all the different electronics settings (gain, shaping time). Use the CRT to get a clean horizontal data set for this as the collection wires are vertical.
- Change the APA bias voltages to collect data when charge is being collected on the induction plane.
- With horizontal tracks look at the effect of changing the electron diverter bias
- Change the recirculation pump speed to see how the purity and purity uniformity changes.
- Modify the gas flow in the ullage to see how this impacts the contamination:
- Shut off the GAr purge to the DSS supports to see if this impacts purity.
- Shut off the GAr purge to the CE chimneys to see how fast the purity goes bad (maybe at the end?)
- Find the plateau in purity over time.
- Pulse the cathode and measure the response in the electronics. This could be useful in the future if you want to know what level voltage step causes what noise.
- Can you try different grounds? This is dangerous as you need to make sure nothing ever floats!
- Is there anything to study the filtering going to the 48V and the PTC? Basically look for power supply effects.

Proposal

- A study needs a sponsor
- The sponsor is responsible for
 - establishing the detector conditions needed for the test
 - arranging for who will conduct the test
 - ensuring that the test results are analyzed and documented in a timely way
- Some studies will require a dedicated task force to plan and execute the work
- Some studies may be proposed by specific consortia, focused on questions related specifically to their system
- Other studies should have a broader participation, with representatives from other consortia : think broadly when planning your studies and invite others to join

2-page Excel form

ProtoDUNE-SP Request/Proposal for Studies	
Sponsor:	<input type="text"/>
Date submitted:	<input type="text"/>
Approved by:	<input type="text"/>
Date approved:	<input type="text"/>
Status (proposed, pending execution, data taking complete, analysis/documentation)	<input type="text"/>
Short title :	<input type="text"/>
Brief description of the study :	<input type="text"/>
What will the outcome be used for :	<input type="text"/>
Is the study necessary for input to the Technical Design Report ?	<input type="text"/>
Who will be conducting the test ?	<input type="text"/>
How long will the test take (calender hours, days, weeks...)?	<input type="text"/>
How and where will the results be documented? (tech note, presentation, TDR section...)	<input type="text"/>
Who will analyze and document the results?	<input type="text"/>
When will the test results be finalized and posted for use? (weeks, months..)	<input type="text"/>
Detector Status Requirements :	
Drift HV :	<input type="text"/>
TPC Bias Voltages :	<input type="text"/>
Photon Detector Bias Volta	<input type="text"/>
Photon Detector SSPs :	<input type="text"/>
Purity Monitors :	<input type="text"/>
Cameras :	<input type="text"/>
Temperature Monitors :	<input type="text"/>
DAQ Configuration:	<input type="text"/>

Use this page to enter any additional requirements needed to carry out the test :

Propose to create a DocDB Entry which holds the blank template and Completed, approved forms.

Once the test is approved, the test's Sponsor will be responsible for the updating the status of the test, and ultimately posting and disseminating the results as stated in the proposal form.

Next steps

- Make the form more user friendly
- Encourage collaborators to make proposals
- If someone has an idea but is not able to do the work themselves, they should find a Sponsor for the test.
- If it is really worth doing, that should not be difficult.

- Discussion/questions/better idea.....