

Subject: Re: background challenges, progress of the studies reported at TIC meeting on March 30th - Summary, version 2 - here the correct text

From: Silvia Dalla Torre <Silvia.DallaTorre@ts.infn.it>

Date: 4/13/2026, 12:06 PM

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On 4/13/2026 12:04 PM, Silvia Dalla Torre wrote:

Dear Colleagues,

please find here below a revised version of the short summary of the March 30th TIC meeting dedicated to the studies of the DSC background challenges.

Thank you for the feedback messages, which contribute to the revised version. Further reports from the calorimeter DSCs are planned at the coming TIC meeting on April 13th, namely today.

Best greetings, Silvia

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TIC meeting, March 30th - Summary

First reports from DSCs about background challenge studies.

Electronics/R-O/DAQ CC WG

A table illustrating ASIC / Digitizer Limitations has been presented. It is mainly based on inputs which are about one year old. Fresh input including background contribution have been provided for SVT.

The limitations along the data flow from RDOs to DAMs and to Echelon0 have been also discussed.

Planning: a template table will be prepared to collect updated data from the DSCs. It is requested that updates include beam BACKGROUND and NOISE.

Far Forward Detectors

The impact of background on the FF tracking devices has been address accessing rates and radiation doses.

Further checks about rates will be performed using minimum-bias DIS events to increase the statistics.

It is reminded that radiation doses/fluences summed from all sources in DD4HEP will be available this week.

Planning: including FF calorimeters in the study with the contributions from DSTCs.

Low-Q2 Taggers

The backgrounds currently merged into campaign files do not include those produced in the FB region. The the beamline geometry in ePIC simulations need to be adjusted

including the different magnetic field in order to match the background simulations geometry and the reconstruction needs to be retrained for new geometry.

The digitization framework is not in place (closely timed hits counted as multiples)

Bremsstrahlung from bunch interactions will be the biggest background

and need to be included by using a post-simulation event merger.

Planning: start studies when all needed ingredients become available;

timelines indication are missing and they have to be elaborated.

Luminosity system

Presently, concerning background in the lumi region, only SR files are available.

Initial studies using these files indicated that shielding around vacuum pipe will be needed.

Also, updated geometry/design of magnets, shielding, collimator are not in the standard configuration geometry yet

(a PR is being considered).

Planning: evaluate rates and doses when all ingredients become available.

SVT

Studies performed with available background files assuming 10um beampipe gold coating.

Detailed hit maps obtained (as needed for the data flow rates of the read-out chain)

and results for purity, efficiency, spatial and angular resolutions and primary vertexing.

Planning: The addition of the load from noise hits is requested.

Radiation studies to be performed.

MPGDs

Hit and channel rates in MPGD detectors with backgrounds have been presented.

Rate maps are obtained without considering the cluster size; therefore, all channel rates must be multiplied by a factor 3 or 4.

Rates have been compared with the capability of the ASIC SALSA indicating no expected issues.

Most of the rate in CyMBaL and BOT is due to the synchrotron radiation, while

the rates in the forward ECT Disks are dominated by physics.

Planning: Check if performance remain fine when using a smaller number of samples (spatial and time resolutions).

Checking the implemented threshold which should be 100 eV.

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