

Report and draft of response for the Reviewer #1. For the second we may write a global reply saying basically that the paper that he mentions has not been submitted to JINST and that the arxiv file has been corrected to make this clearer.

Comments of the reviewer are in blue.

Draft of responses are in black.

In red, open questions in which I will appreciate your help..

A. Irles, 2019/04/19

-----  
Reviewer #1: The authors present initial results from a beam test at DESY of the technological prototype of the CALICE highly granular silicon-tungsten electromagnetic calorimeter (SiW-ECAL). When completed this will be a highly innovative, significant instrument. The tested calorimeter included seven of the layers of  $18 \times 18 \text{ cm}^2$  coverage. The goals of the beam test program are:

1. Calibration without tungsten absorber using 3 GeV positrons,
2. Test of the tungsten-less system in a magnetic field up to 1 T, and
3. Test of the response to electrons of fully equipped detector, including the tungsten absorber.

In this paper the first goal is addressed in a 3 GeV positron beam and, briefly, results are presented for the second goal.

The authors explain in detail their analysis of the data, including suppression of noisy channels, measurements of noise in remaining channels, and response to electrons that behave as MIPs. Some tests of pedestal and noise stability within a magnetic field are also presented.

Since a major purpose of the calorimeter is to measure electromagnetic showers, it is disappointing that the authors do not present such results. While there is a detailed presentation of noisy channels, and the characterization of the various types of noise, with these channels masked from the output, measurements of shower development for the seven layers with tungsten absorber are not presented. It may be that the beam test did not reach that level of data taking.

The analysis of the calibration without tungsten that is presented is pretty well done and interesting. The presentation of the magnetic field effects is quite limited and would be better if expanded and clarified.

The primordial goal of the tests in the Magnetic field was technical (get experienced in the running in magnetic field, test the durability of the components, etc). The amount data collected is limited, therefore not largely discussed in the text. In any case, we have added some words to describe more explicitly the technical character of the test (section 3, introduction) and we have added some clarifications in section 3.2.1 and in Fig.9

My recommendation is to publish the paper after a revision that includes adding electromagnetic shower results from the beam test.

The original goal of the paper is to serve as a technical paper to show the performance of the technological SiW-ECAL prototype at its 2017 status. The omission of the em. Shower results was made in purpose for two reasons : 1) to keep the paper complexity under control and 2) to keep also a «short» authorlist that with all people involved in the R&D of the prototype. For the publication of a full analysis of the em showers it is mandatory to set up a CALICE

editorial board. It is in CALICE intentions to perform such analysis in the coming future.

However, we completely understand the comments of the referee. We have discussed this issue within the CALICE collaboration and we have agreed that we should include some preliminary results of em. Shower profiles, without MC comparisons. This will allow to discuss the basic performance of the calorimeter, to keep the original nature of the paper (making emphasis in the technical aspects of the calorimeter) and it will prepare the road for a future CALICE article fully dedicated to physics.

We have added a new section « Performance of the SiW-ECAL for low energy electromagnetic showers ». We hope that the referee considers now the content of the article more suitable for the publication.

I noted a number of issues with the text and presentation which I list here. I suspect there are more that would benefit from a careful review of the text and presentation in tables and figures.

Several of the figures are not suitable for black and white printing and should be redone before the paper is published.

We provide a new version of Figures 2, 3, 4, 8 & 9.

The first sentence of the abstract is not a complete sentence.

« The technological prototype of the CALICE highly granular silicon-tungsten electromagnetic calorimeter (SiW-ECAL) tested in beam at DESY in 2017. »

→

« The technological prototype of the CALICE highly granular silicon-tungsten electromagnetic calorimeter (SiW-ECAL) has been tested in beam at DESY in 2017. »

label two parts of Figure 1, Figure 1(a) and Figure 1(b) so that references in text can be specific.

Done

line 97 "In the picture" rather "in Figure 1(a)"

Done

line 136 "timestamped" broken at wrong point "times" "tamped"

Done

line 138 "brunch" should this be "bunch"?

Done

line 145 "bigger" suggest using "larger"

Done

lines 166-67 poor sentence construction

« Test in a magnetic field up to 1 T using, also without tungsten and with 3 GeV positrons. For this test, a PVC structure was designed and produced to support one single readout module.»

→ « Test in a magnetic field up 1 T using 3 GeV positron. For this test, a PVC structure was designed and produced to support one single readout module, without any tungsten plates.»

lines 281-301 reference to "width" and "standard deviation"  
It can be assumed the term width is used here to be  
synonymous with standard deviation, but usually width  
refers to full width at half max. So care in terms  
is warranted.

Figure 5 - is pedestal "width" the pedestal "standard deviation"?  
I am already defining what I mean with width... «The width of the pedestal is  
associated to the standard deviation of the Gaussian.» Do you have any proposal  
on the wording of this ?

line 315 reports S/N is measured to be 20.4 based on triggered events.  
line 252 S/N arrived at 12.8 using threshold curves with charge  
injection. Why the difference? Could it be the triggered events  
for electrons are not good approximations for a MIP?

In fact, the differences are intrinsic to the system since the ASIC has two  
« separated electronic branches » for the trigger decision and the charge  
measurement. These branches have different shapers and amplifiers. It is  
explained in lines 122-138 »  
Do you have any proposal of how to improve the wording on this issue in the  
article?

lines 460-61 (ref 17) search for doi:10.1088/1748-0221/13/03/C03009  
fails to find reference  
doi.org/10.1088/1748-0221/13/03/C03009 is successful

Done

line 476 punctuation (period?) missing before "arXiv:1810.05133"

Done

Figure 9 - caption should mention the comparison of different magnetic  
field values. There is no mention of magnetic field in the caption.

Done

Proposal of plots for the new section:





