

Return the comments of the second review for the referee on the
report
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Abstract

Thanks for the comments of the second review from referee, we did some minor revisions, and this document is used to describe the feedback and comments.

Keywords:

1. The feedback and comments for referee

Thank you for your encouragement and comments. For some points you mention in the report, describing as follows:

- Section 1.1: FCC-ee will not measure high momentum bosons and tops.
→Answer: Sorry for adding the wrong citation, kick it out already.
- Section 3.4: The baseline FCC-hh detector references are talks, while the CDR should be used as well here
→Answer: We have added the reference in a sentence.
→Sentence: This study confirms the baseline SiFCC detector geometry [9] that uses $5 \times 5 \text{ cm}^2$ HCAL cells, corresponding to $\Delta\eta \times \Delta\phi = 0.022 \times 0.022$. Similar HCAL cell sizes, 0.025×0.025 , were recently adopted for the baseline FCC-hh detector [2,27,28] planned at CERN.
- To my mind, the study should be extended by an investigation of clustering properties and their optimizations in the light of different granularity choices for the HCAL (and ECAL).

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→Answer: Thanks. This is a preliminary study that uses the SiD-optimized clustering for the $1 \times 1 \text{ cm}^2$ case. The clustering was not optimized for the coarse granularity ($5 \times 5 \text{ cm}^2$ and $20 \times 20 \text{ cm}^2$) considered in this paper. However, it is only natural to expect that optimization of clustering for other than $1 \times 1 \text{ cm}^2$ will make the conclusion in this paper even stronger. Given that any optimisation of clustering requires significant effort, such studies will be conducted in the future.

- The second point is the source of correlated noise in the calorimeter cells in the form of showers stemming from additional pp interactions observed together with the pp collision of interest (so-called pile-up). The distinction made between signal and background in the paper is in fact between two different signal sources, $Z' \rightarrow q\bar{q}$ for background and either $Z' \rightarrow t\bar{t}$ or $Z' \rightarrow WW$ for signal. The jets formed by these do not suffer from the additional pp interactions, which in reality would be a major concern in reconstructing jet substructure reliably.

→Answer: Because we wanted to simplify the case and excluded the complicated jet conditions, we only focused on these three types of processes, including QCD jets ($Z' \rightarrow q\bar{q}$), two-prong jets ($Z' \rightarrow WW$), and three-prong jets ($Z' \rightarrow t\bar{t}$). It can help us to see the HCAL performance for different scenarios without the contamination from pileups. The condition mixed with pile-up could be our next step for probing the jet performance of HCAL.