Dear Igor,

Congratulations on this well-written work, which clearly shows the quality of your efforts in developing the iDDBSCAN algorithm.

I have few main comments and questions I would like to discuss with you (I share them below), as well as some minor comments and typos that are noted in the attached PDF. You'll also find some comments from Andrea, who read the paper with me.

General:

I had the impression that some sentences could be simplified or even removed. I would greatly simplify the writing, particularly in the abstract and the introductory section, by removing parts that are not essential to the article's objective, which is to describe the algorithm and show its benefits with respect to iDBSCAN.

General:

The Fe source is not used as an example of the expected DM interaction. It is instead employed to calibrate the detector response at low energy (O(keV)), including its efficiency, energy, and position resolution, for electronic recoils. The expected DM signature is different, as we expect a low-energy nuclear recoil interaction, which is fundamentally different from the electronic recoil energy release. Therefore, my suggestion is to not put the focus on the performance for a "DM-like" signal, but rather on the overall performance of low-energy reconstruction.

General:

I am unclear about some of the features of the two datasets, FE and NRAD, used for the performance analysis:

1. do they have equal exposure, meaning the same number of images captured with the same camera exposure?
2. the statement “it is expected that the difference in the number of clusters between them gives an estimation of the number of iron spots in the ER dataset” seems too strong to me:
    1. first of all, how do you know how many “tracks” and “spots” you have in the dataset before reconstruction?
    2. Since the number of observed signal is a poisson-distributed random number, what is the impact of your assumption?

General:

The performance analysis show scans in pairs or individual parameters, without specifying the value of the other parameters. If I understood correctly, these scans are performed by fixing the other parameters to certain values. This approach is valid if the 5 parameters are “uncorrelated”, meaning that the results are not influenced by their relative behavior (e.g. as you show in Fig 6 this happens for eps and Nmin of the DBSCAN algorithm). Is this true? For example: rho and eps_dir are treated separately, but I expect them to be quite entangled. Do you have a plot showing that that those parameters are not “correlated”? In any case, if this is the case, you should mention it in the text.

General:

In my opinion, it would be beneficial to also present a comparison of the computational performance of the algorithm with the previously used iDBSCAN. Perhaps, a short paragraph before Sec.6 would be an appropriate location for this information.

Minor:

How is the “inlier ratio” defined in sec. 3.2, end of page 5, in the “DBSCAN seeding” bullet?

Minor:

What is the normalization of the “efficiencies” that you show for example in the right plot of Fig. 8? In other words, how to you know the real total number of Fe events in the dataset?