On behalf of all the co-authors, I would like to express our gratitude to the editor and the referee for their careful review of our paper. Below, we provide our responses to the referee's comments. We have incorporated the changes suggested by the referee in the new draft. We have also added all the authors of the AEgIS collaboration in the author list.

The simulation tools and results presented in this paper are steps towards a comprehensive software environment to study particle trapping schemes in the AEgIS apparatus. I recommend to accept this paper for publications as proceedings paper. I have minor comments I wish the authors to consider for the final version.

1) Simulation setup

In this section you write

- self-generated magnetic fields due to particle motion can be neglected
- A timestep of 1 ns is sufficient to capture the relevant particle dynamics

Can you provide arguments why these assumptions are valid?

Reply: (a) By performing simple pen-and-paper calculations using the Ampere's law, it can be demonstrated that for currents in the range of microamperes to nanoamperes, with a diameter of 3 mm, the magnetic fields generated at the centre due to particle oscillations in the trap are on the order of micro-Tesla to nano Tesla. These fields are negligible compared to the 1T axial magnetic field used for particle trapping which govern the axial and cycloidal motions and, therefore, are ignored. For example, a current of 1μA and 1.5mm radius the magnetic field is

$$B=\mu I/2R = 41nT.$$

However, for understanding of more complex plasma behaviour even small changes in the magnetic field variation play and important role which can be incorporated using the full PIC solver which will be a part of future work.

(b) If the time step exceeds 1ns, the electrons do not spend enough time within the simulation domain and tend to escape. On the other hand, if the time step is smaller than 1ns, it significantly increases the computational requirements. Therefore, a time step of 1ns is chosen as a balanced value, adequate for studying the energy and density evolution of electrons within the trap.

2) Figure 2, In the simulated data presented in this figure the initial temperature of the electrons and antiprotons is 55K. To which mean energy does that correspond?

Reply: The plot corresponds the mean kinetic energy of the antiprotons oscillating inside the trap between A1-A4 electrodes as a function of time for different trap potentials. A Maxwellian temperature of 55K corresponds to a starting mean kinetic energy of around 7.1 meV for both electrons and antiprotons.