

Atmos. Meas. Tech. Discuss., referee comment RC1  
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## Comment on amt-2022-29

Anonymous Referee #1

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Referee comment on "A high-transmission axial ion mobility classifier for mass–mobility measurements of atmospheric ions" by Markus Leiminger et al., Atmos. Meas. Tech. Discuss., <https://doi.org/10.5194/amt-2022-29-RC1>, 2022

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Leiminger et al. designed the axial ion mobility classifier (AMC). The instrument was characterized by laboratory experiments using Tetraheptylammonium bromide (THAB) and Tetrapropylammonium iodide (TPPAI) clusters that were generated using the electrospray ionization technique. The instrument was also connected with an atmospheric pressure ionization mass spectrometer for measuring atmospheric ion clusters. The study technical sounds. The reviewer personally looking forward to seeing future applications of the technique to laboratory and field studies.

The manuscript contains some grammatical errors. In addition, contents can be better organized. I suggest the authors to consult a professional editing service for improving the quality of the manuscript.

### Comments

L132: 'The sheath flow is recirculated via a brushless blower (model code: 465.3.265-841) from Domel, Slovenia, at experimentally determined flow rates of approximately 50 to 115 L/min.'

I was confused by this expression, as the sheath flow rate is obviously an important parameter for the AMC. Detailed descriptions about the measurement and control of the sheath flow would be needed.

Figure S1

It seems that the values for y-axis (e.g., fraction of THAB 3er (-)) are occasionally smaller than zero. I am wondering how the data were measured/analyzed.

L257: 'Fig. 5 panels C and D.'

Figure 6?

L268: 'We attributed the reason for this initial increase in transmission to the combined effect of sub-isokinetic sampling in the region of the core sampling and elevated electric fields

that might reach into the core sampling as is exemplarily illustrated in Fig. S5.'

L293: 'The results of the sizing resolution in relation to the ratio  $Q_{total} / Q_{ae}$  are shown in the lower panels of Fig. 7.'

How was the resolution defined? It needs to be explicitly explained.

Figure 8

Figure caption/legend does not tell what the dashed lines are. They need to be updated.

Figure 9

x-axis of the upper panel is hidden by the lower panel. It needs to be modified.