

## ***Interactive comment on “Mass spectrometry of planetary exospheres at high relative velocity: direct comparison of open- and closed source measurements” by Stefan Meyer et al.***

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### General comments

This paper presents a lab study comparing the performance of different neutral atom or molecule sources (open and closed) for a mass spectrometer instrument that is part of the JUICE payload. The test conditions represent the expected situation at the Jovian icy moons. The study compares the measurement results with an analytic expression derived earlier and available in the literature. The conclusions are substantial and clear: both sources behave as expected over the relevant mass and velocity ranges. This corroborates the argumentation in favor of including both open and close sources on the instrument, and paves the way for further calibration work.

C1

### Specific comments

Section 1 : It would be good here to recall the reason why you have foreseen both types of source in the first place; you now give that on page 3 starting on line 13, but it would be useful to explain that earlier.

The authors explain the advantage of a closed source in terms of the large field of view and the higher performance regarding mass resolution and transmission. Isn't another advantage that the fragmentation patterns can be defined more precisely due to the known, fixed energy the particles have acquired in the antechamber?

### Technical corrections

Just a few suggestions:

Page 1 7: habitable worlds inside icy moons -> habitable environments on or inside icy moons 34: compositions -> composition 35: spectrometer -> spectrometer,

Page 2 4: developed -> have developed 4: PEP -> PEP, 12: Rosina -> ROSINA 14: calibrating for -> calibrating 18: photograph of -> photograph of the 18: CASIMIR -> CASYMIR 19: in clean room area -> in the clean room 23 and 25: you defined the abbreviation NIM earlier (page 1) so no need to repeat that 31: at Europa torus crossing -> during Europa torus crossing 32: the gas enters not with spacecraft velocity, but with the speed of the gas relative to the spacecraft

Page 4 9: and DLC-coated -> and is DLC-coated 11: at -> for 15: entrance -> entrance; 18: made of -> made based on 36: JUICE mission, however -> JUICE mission. However,

Page 5 7: except of -> except for 12: follow -> follows 23: both, -> both

References: sort alphabetically? Reference Grasset et al., Ablanalp et al, Balsiger et al. : missing doi

Page 7 6: edt -> eds 9: Int. Jou. Mass Spectr. -> Int. J. Mass Spectr.

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