Supporting Information for "The Infrared Footprint Tracks of Io, Europa and Ganymede at Jupiter Observed by *Juno*-JIRAM"

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Additional Supporting Information (Files uploaded separately)

1. Captions for Table S1 to S24

Introduction

The Data Sets S1-S6 contains the fit to the Main Alfvén Wing spot position of Io, Europa and Ganymede as they are shown in Figure 1 of the main text. The coordinates of the Ganymede footprint as function of the satellite longitude (Table S5 and S6) exhibit oscillations that are due to the intrinsic variability of the footprint position. The Europa footprint (Table S3 and S4) also exhibits a similar behaviour, although to a much lesser extent. We did not filter this oscillations out to not introduce an additional layer of data processing, which is left to the reader's needs. The Data Sets S7-S12 contain the fit to the footprint tail position of the three moons.

The Data Sets S13-S18 contain the position of the Main Alfvén Wing spot of Io, Europa and Ganymede derived from the JIRAM images, and the Data Sets S19-S24 the respective footprint-tail position.

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Table S1.

System III spherical coordinates of the Main Alfvén Wing spot of Io in the northern hemisphere, corresponding to the continuous grey line (fit) in Figure 1 in the main text. The first column is the satellite longitude in degrees, the second the radial distance in km from Jupiter's center, the third and fourth the footprint longitude and planetocentric latitude in degrees respectively.

Table S2.

System III spherical coordinates of the Main Alfvén Wing spot of Io in the southern hemisphere, corresponding to the continuous grey line (fit) in Figure 1 in the main text. The first column is the satellite longitude in degrees, the second the radial distance in km from Jupiter's center, the third and fourth the footprint longitude and planetocentric latitude in degrees respectively.

Table S3.

System III spherical coordinates of the Main Alfvén Wing spot of Europa in the northern hemisphere, corresponding to the continuous grey line (fit) in Figure 1 in the main text. The first column is the satellite longitude in degrees, the second the radial distance in km from Jupiter's center, the third and fourth the footprint longitude and planetocentric latitude in degrees respectively.

Table S4.

System III spherical coordinates of the Main Alfvén Wing spot of Europa in the southern hemisphere, corresponding to the continuous grey line (fit) in Figure 1 in the main text. The first column is the satellite longitude in degrees, the second the radial distance in km from Jupiter's center, the third and fourth the footprint longitude and planetocentric

latitude in degrees respectively.

Table S5.

System III spherical coordinates of the Main Alfvén Wing spot of Ganymede in the northern hemisphere, corresponding to the continuous grey line (fit) in Figure 1 in the main text. The first column is the satellite longitude in degrees, the second the radial distance in km from Jupiter's center, the third and fourth the footprint longitude and planetocentric latitude in degrees respectively.

Table S6.

System III spherical coordinates of the Main Alfvén Wing spot of Ganymede in the southern hemisphere, corresponding to the continuous grey line (fit) in Figure 1 in the main text. The first column is the satellite longitude in degrees, the second the radial distance in km from Jupiter's center, the third and fourth the footprint longitude and planetocentric latitude in degrees respectively.

Table S7.

System III spherical coordinates of the Io footprint tail in the northern hemisphere, corresponding to the continuous grey line (fit) in panel *(b)* and the continuous black line in panel *(c)* of Figure 1 in the main text. The first column the radial distance in km from Jupiter's center, the second and third the footprint tail longitude and planetocentric latitude in degrees respectively.

Table S8.

System III spherical coordinates of the Io footprint tail in the southern hemisphere, corresponding to the continuous grey line (fit) in panel *(b)* and the continuous black line in panel *(c)* of Figure 1 in the main text. The first column the radial distance in km

from Jupiter's center, the second and third the footprint tail longitude and planetocentric latitude in degrees respectively.

Table S9.

System III spherical coordinates of the Europa footprint tail in the northern hemisphere, corresponding to the continuous grey line (fit) in panel *(b)* and the continuous black line in panel *(c)* of Figure 1 in the main text. The first column the radial distance in km from Jupiter's center, the second and third the footprint tail longitude and planetocentric latitude in degrees respectively.

Table S10.

System III spherical coordinates of the Europa footprint tail in the southern hemisphere, corresponding to the continuous grey line (fit) in panel *(b)* and the continuous black line in panel *(c)* of Figure 1 in the main text. The first column the radial distance in km from Jupiter's center, the second and third the footprint tail longitude and planetocentric latitude in degrees respectively.

Table S11.

System III spherical coordinates of the Ganymede footprint tail in the northern hemisphere, corresponding to the continuous grey line (fit) in panel *(b)* and the continuous black line in panel *(c)* of Figure 1 in the main text. The first column the radial distance in km from Jupiter's center, the second and third the footprint tail longitude and planetocentric latitude in degrees respectively.

Table S12.

System III spherical coordinates of the Ganymede footprint tail in the southern hemisphere, corresponding to the continuous grey line (fit) in panel *(b)* and the continuous

black line in panel *(c)* of Figure 1 in the main text. The first column the radial distance in km from Jupiter's center, the second and third the footprint tail longitude and planetocentric latitude in degrees respectively.

Table S13.

Cartesian coordinates in km of the Io footprint in the northern hemisphere, corresponding to the data points in Figure 1 of the main text. The first column contains the perijove (PJ) number, the second the hemisphere observed. The third, fourth and fifth columns contain the date of the observation, while the sixth and seventh columns are the starting and ending time of the observation, respectively (they coincide for the Main Alfvén Wing spot observations). The X, Y and Z System-III coordinates of the spot are reported in column 8, 9 and 10. The last six columns contain the upper (up) and lower (dw) error on the spot position.

Table S14.

Cartesian coordinates in km of the Io footprint in the southern hemisphere, corresponding to the data points in Figure 1 of the main text. The first column contains the perijove (PJ) number, the second the hemisphere observed. The third, fourth and fifth columns contain the date of the observation, while the sixth and seventh columns are the starting and ending time of the observation, respectively (they coincide for the Main Alfvén Wing spot observations). The X, Y and Z System-III coordinates of the spot are reported in column 8, 9 and 10. The last six columns contain the upper (up) and lower (dw) error on the spot position.

Table S15.

Cartesian coordinates in km of the Europa footprint in the northern hemisphere, corre-

sponding to the data points in Figure 1 of the main text. The first column contains the perijove (PJ) number, the second the hemisphere observed. The third, fourth and fifth columns contain the date of the observation, while the sixth and seventh columns are the starting and ending time of the observation, respectively (they coincide for the Main Alfvén Wing spot observations). The X, Y and Z System-III coordinates of the spot are reported in column 8, 9 and 10. The last six columns contain the upper (up) and lower (dw) error on the spot position.

Table S16.

Cartesian coordinates in km of the Europa footprint in the southern hemisphere, corresponding to the data points in Figure 1 of the main text. The first column contains the perijove (PJ) number, the second the hemisphere observed. The third, fourth and fifth columns contain the date of the observation, while the sixth and seventh columns are the starting and ending time of the observation, respectively (they coincide for the Main Alfvén Wing spot observations). The X, Y and Z System-III coordinates of the spot are reported in column 8, 9 and 10. The last six columns contain the upper (up) and lower (dw) error on the spot position.

Table S17.

Cartesian coordinates in km of the Ganymede footprint in the northern hemisphere, corresponding to the data points in Figure 1 of the main text. The first column contains the perijove (PJ) number, the second the hemisphere observed. The third, fourth and fifth columns contain the date of the observation, while the sixth and seventh columns are the starting and ending time of the observation, respectively (they coincide for the Main Alfvén Wing spot observations). The X, Y and Z System-III coordinates of the spot are

reported in column 8, 9 and 10. The last six columns contain the upper (up) and lower (dw) error on the spot position.

Table S18.

Cartesian coordinates in km of the Ganymede footprint in the southern hemisphere, corresponding to the data points in Figure 1 of the main text. The first column contains the perijove (PJ) number, the second the hemisphere observed. The third, fourth and fifth columns contain the date of the observation, while the sixth and seventh columns are the starting and ending time of the observation, respectively (they coincide for the Main Alfvén Wing spot observations). The X, Y and Z System-III coordinates of the spot are reported in column 8, 9 and 10. The last six columns contain the upper (up) and lower (dw) error on the spot position.

Table S19.

Cartesian coordinates in km of the Io footprint tail in the northern hemisphere, corresponding to the data points in Figure 1 of the main text. The first column contains the perijove (PJ) number, the second the hemisphere observed. The third, fourth and fifth columns contain the date of the observation, while the sixth and seventh columns are the starting and ending time of the observation, respectively. The X, Y and Z System-III coordinates of the tail are reported in column 8, 9 and 10. The last six columns contain the upper (up) and lower (dw) error on the tail position.

Table S20.

Cartesian coordinates in km of the Io footprint tail in the southern hemisphere, corresponding to the data points in Figure 1 of the main text. The first column contains the perijove (PJ) number, the second the hemisphere observed. The third, fourth and fifth

columns contain the date of the observation, while the sixth and seventh columns are the starting and ending time of the observation, respectively. The X, Y and Z System-III coordinates of the tail are reported in column 8, 9 and 10. The last six columns contain the upper (up) and lower (dw) error on the tail position.

Table S21.

Cartesian coordinates in km of the Europa footprint tail in the northern hemisphere, corresponding to the data points in Figure 1 of the main text. The first column contains the perijove (PJ) number, the second the hemisphere observed. The third, fourth and fifth columns contain the date of the observation, while the sixth and seventh columns are the starting and ending time of the observation, respectively. The X, Y and Z System-III coordinates of the tail are reported in column 8, 9 and 10. The last six columns contain the upper (up) and lower (dw) error on the tail position.

Table S22.

Cartesian coordinates in km of the Europa footprint tail in the southern hemisphere, corresponding to the data points in Figure 1 of the main text. The first column contains the perijove (PJ) number, the second the hemisphere observed. The third, fourth and fifth columns contain the date of the observation, while the sixth and seventh columns are the starting and ending time of the observation, respectively. The X, Y and Z System-III coordinates of the tail are reported in column 8, 9 and 10. The last six columns contain the upper (up) and lower (dw) error on the tail position.

Table S23.

Cartesian coordinates in km of the Ganymede footprint tail in the northern hemisphere, corresponding to the data points in Figure 1 of the main text. The first column contains

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the perijove (PJ) number, the second the hemisphere observed. The third, fourth and fifth columns contain the date of the observation, while the sixth and seventh columns are the starting and ending time of the observation, respectively. The X, Y and Z System-III coordinates of the tail are reported in column 8, 9 and 10. The last six columns contain the upper (up) and lower (dw) error on the tail position.

Table S24.

Cartesian coordinates in km of the Ganymede footprint tail in the southern hemisphere, corresponding to the data points in Figure 1 of the main text. The first column contains the perijove (PJ) number, the second the hemisphere observed. The third, fourth and fifth columns contain the date of the observation, while the sixth and seventh columns are the starting and ending time of the observation, respectively. The X, Y and Z System-III coordinates of the tail are reported in column 8, 9 and 10. The last six columns contain the upper (up) and lower (dw) error on the tail position.