

EPSC Abstracts

Vol. 15, EPSC2021-300, 2021

<https://doi.org/10.5194/epsc2021-300>

Europlanet Science Congress 2021

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



Solar Orbiter's first Venus flyby: observations from the Radio and Plasma Wave instrument

Lina Hadid¹ and the Solar Orbiter's RPW, MAG and EPD teams*

¹Laboratoire de Physique des Plasmas, CNRS, CEDEX Palaiseau, France (lina.hadid@lpp.polytechnique.fr)

*A full list of authors appears at the end of the abstract

On December 27, 2020, Solar Orbiter completed its first gravity assist manoeuvre of Venus. While this flyby was performed to provide the spacecraft with sufficient velocity to get closer to the Sun and observe its poles from progressively higher inclinations, the Radio and Plasma Wave (RPW) consortium, along with other operational in-situ instruments, had the opportunity to perform high cadence measurements and study the plasma properties in the induced magnetosphere of Venus. In this work we present an overview of the in situ observations performed by RPW, inside the induced magnetosphere of Venus, during this first encounter of Solar Orbiter.

These data allowed conclusive identification of various waves at low and higher frequencies than previously observed and detailed investigation regarding the structure of the induced magnetosphere of Venus. Furthermore, noting that prior studies were mainly focused on the magnetosheath region and could only reach 10-12 Venus radii (RV) down the tail, the particular orbit geometry of Solar Orbiter's VGAM1, allowed the first investigation of the nature of the plasma waves continuously from the bow-shock to the magnetosheath, extending to $\approx 70 R_V$ in the far distant tail region.

Solar Orbiter's RPW, MAG and EPD teams: L. Z. Hadid, N. J. T. Edberg, T. Chust, D. Píša, A. P. Dimmock, M. W. Morooka, M. Maksimovic, Yu. V. Khotyaintsev, J. Souček, M. Kretzschmar, A. Vecchio, O. Le Contel, A. Retino, R. C. Allen, M. Volwerk, C. M. Fowler, L. Sorriso-Valvo, T. Karlsson, O. Santolík, I. Kolmašová, F. Sahraoui, K. Stergiopoulou, X. Moussas, K. Issautier, R. M. Dewey, M. Klein Wolt, O. E. Malandraki, E. P. Kontar, G. G. Howes, S. D. Bale, T. S. Horbury, M. Martinović, A. Vaivads, V. Krasnoselskikh, E. Lorfèvre, D. Plettemeier, M. Steller, Š. Štverák, P. Trávníček, H. O'Brien, V. Evans, V. Angelini, M. C. Velli, and I. Zouganelis