



ID de Contribution: 4

Type: **Oral presentation**

## **Mercury's ionized exosphere: Global structure and ion dynamics**

*jeudi 27 février 2020 11:15 (15 minutes)*

The Mercury plasma environment is enriched in heavy ions from photo-ionization of the neutral exosphere. The time-of-flight spectrometer FIPS onboard the MESSENGER spacecraft has detected many planetary ion species, of which  $\text{He}^+$ , the  $\text{Na}^+$ -group (including  $\text{Na}^+$ ,  $\text{Mg}^+$  and  $\text{Si}^+$ ) and the  $\text{O}^+$ -group (including  $\text{O}^+$  and several water group ions) are the most abundant. Previous models of the planetary ion distribution inside Mercury's magnetosphere have concentrated on the abundant  $\text{Na}^+$  and  $\text{H}^+$  ion populations. Comparison with FIPS data has been limited to the first two MESSENGER flybys. We have developed a test-particle model which describes the full 3D distribution of several planetary ion species which are derived from the neutral exosphere. The global ion density and energy distribution of  $\text{Na}^+$ ,  $\text{O}^+$  and  $\text{He}^+$  will be presented here. We will also describe the orbital evolution of the  $\text{Na}^+$  ion density.

### **Field**

Planetology (incuding small bodies and exoplanets)

**Auteur principal:** WERNER, Elisabeth (LATMOS)

**Co-auteurs:** LEBLANC, François (LATMOS); CHAUFRAY, Jean-Yves (LATMOS); MODOLO, Ronan (LATMOS)

**Orateur:** WERNER, Elisabeth (LATMOS)

**Classification de Session:** Talk

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