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# Thermal and energetic components of Mercury's Exosphere

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There are several reasons that motivate the forthcoming Bepi-Colombo and Messenger missions to Mercury. Among them, the exploration of the very badly known direct environment of Mercury is one of the key questions that the European Bepi-Colombo mission is particularly well adapted to answer. The different instruments foreseen for this mission, namely ion and neutral mass spectrometers (SERENA) and a UV spectrometer (PHEBUS) have been specifically thought in order to measure the different parameters of the atmosphere of Mercury. Actually due to its very low density, such an atmosphere is fully an exosphere with an exobase at the surface (like the Moon). As a consequence, several mechanisms of exospheric production have been identified and are most probably very different in term of spatial and temporal changes as well as in term of intensity and energy distributions of the produced exospheric population. Therefore, the study of the different energetic populations that composed Mercury's exosphere will represent a crucial information to better understand the origins of Mercury's exosphere. It will be also a key parameter to constrain any estimate of the neutral exospheric loss rate into the interplanetary medium. In this talk, I will present what can be deduced for our present knowledge of these mechanisms of production. I will describe the different possibilities that have been suggested as the origin of Mercury's exosphere and will suggest what kind of measurements should lead to solve some of the present questions on the origins of the exosphere.